PROKOF'YEV, V.I.; KAMERSHTEYN, A.G.

Establishing technical principles for calculating and designing pipelines. Stroi. pred. neft. prom. 3 no.6:12-14 Je '58.
(MIRA 11:7)

1.Zam. direktora po nauchnoy chasti Vsesoyuznogo nauchno-issledovatel'skogo instituta tverdykh splavov (for Prokof'yev). 2.Zav. laboratoriyey prochnosti Vsesoyuznogo nauchno-issledovatel'skogo instituta tverdykh splavov (for Kamershteyn).
(Pipelines)

SHISHKIN, Nikolay Fedorovich, kand.tekhn.nauk; OLEKSEVICH, Valeriy Pavlovich; DANILIN, Petr Yakovlevich; MIKHEYEV, Yuriy Aleksandrovich; SYCHEV, Leonid Ivanovich. Prinimali uchastiye: SHALAGINOVA, T.S., inzh.; SMORODINSKIY, Ya.M., kand.tekhn.nauk; KALINICHENKO, M.F., inzh.; CHASHKIN, Ye.V., inzh.; ASTAF'YEV, V.D., inzh.; PROKOF'YEV, V.I., vedushchiy konstruktor; ROGOV, V.A., starshiy master; MOSKALENKO, V.M., laborant; GERASIMOV, N.F., laborant; POPOV, N.A., kand.fiziko-matem. nauk; KALINICHENKO, M.F., inzh.. LYUBIMOV, N.G., otv.red.; ALADOVA, Ye.I., tekhn.red.; PROZOROVSKAYA, V.L., tekhn.red..

[Protection of the electric equipment and cable networks in mines] Zashchita shakhtnykh elektroustanovok i kabel'nykh setei. Pod red. N.F.Shishkina. Moskva, Ugletekhizdat, 1959. 242 p. (MIRA 12:3)
(Electricity in mining) (Electric cables)

SOV/135-59-1-1/18

AUTHOR: Prokof'yev, V.I., Candidate of Technical Sciences

TITLE: The Role of Welding in the Development of the Gas Industry and in Main Gas Pipeline Construction for 1959-1965 (Rol' svarki v razvitii gazovoy promyshlennosti i sooruzhenii magistral'nykh gazoprovodov v 1959-1965 gg)

PERIODICAL: Svarochnoye proizvodstvo, 1959, Nr 1, pp 1-3 (USSR)

ABSTRACT: The article deals with the prospective development of the gas industry from 1959 to 1965. The Conversion of various industrial branches to gas fuel, such as open-hearth steel smelting, cement and synthetic material production, operation of power plants, production of illuminating gas, etc, will increase productivity. By 1970, gas output will reach 270 to 320 billion cu m per year. The complete gasification of industry will necessitate the development of pipeline building (50,000 km)

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SOV/135-59-1-1/18

The Role of Welding in the Development of the Gas Industry and in Main Gas Pipelin Construction for 1959-1965

which can only be brought about by greater use of the welding process. Higher requirements in the quality of longitudinal and butt joints entail the necessity of developing mechanized assembly work on the spot and automatic butt welding of large diameter pipes (up to and over 720 mm). There are 2 tables.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut po stroitel'stvu magistral'nykh truboprovodov "VNIIST" (The All-Union Scientific Research Institute for Main Pipeline Construction "VNIIST")

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L 17148-65 EPA(s)-2/EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4/Pt-10
ACCESSION NR: AR4049273 WW/RM S/0081/64/000/015/K012/K012 /2

SOURCE: Ref. zh. Khimiya, Abs. 15K82 11 B

AUTHOR: Andreyeva, Ye. A., Bulayev, D.P., Zinevich, A.M., Prokof'yev, V.I., Serafimovich, V.B. 6

TITLE: Protective coating of underground piping with adhesive polymer films 6

CITED SOURCE: Tr. Vses. n.-i. in-ta po str-vu magistral'n. truboprovodov, vy*p. 17, 1963, 5-51

TOPIC TAGS: underground pipe, insulation material, polymer film, adhesive polymer film, protective coating, polyethylene film, polyvinyl chloride

TRANSLATION: The authors studied and developed new insulation materials based on adhesive polymer films. They also developed methods of applying these coatings to piping, improved the procedures for evaluating film properties and wrote requirements

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ACCESSION NR: AR4049273

specifications of VNIIST satisfy the requirements for pipe coatings. As indicated by experiments, these films can be used year-round to coat piping at air temperatures above and below the freezing point. Introduction of the use of adhesive polymer

Bibl. with 23 titles. N. Popova [illegible] piping) totalling 122,200 rubles.

ASSOCIATION: none

SUB CODE: MT ENCL: 00

Card 2/2

PROKOF'YEV, V.I., kand. tekhn. nauk, red.; RAZUMOVSKAYA, T.Ya., red.

[Collection of annotations of scientific and research work carried out in 1962] Sbornik annotatsii nauchno-issledovatel'skikh rabot za 1962 g. Moskva, TSentr. nauchno-tekhn. informatsii Gos. proizvodstvennogo kom-ta po gazovoi promyshl. SSSR, 1963. 71 p. (MIRA 17:10)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut po stroitel'stvu magistral'nykh truboprovodov.

CHEKMAREV, A.P.; PROKOF'YEV, V.I.; MELESHKO, V.I.; KILIYEVICH, A.F.

Theoretical basis for the measurement of specific contact forces in rolling with the help of spot dynamometers. Izv. vys. ucheb. zav.; chern. met. 7 no.10:64-69 '64.

(MIRA 17:11)

CHEKMAREV, A.P., akademik; PROKOF'YEV, V.I., inzh.

Analytic determination of specific pressures during the hot rolling of steel. Trudy Inst. chern. met. AN URSR 17:55-66 '62. (MIRA 15:10)

1. Akademiya nauk UkrSSR (for Chekmarev).
(Rolling (Metalwork)) (Deformations (Mechanics))

PROKOF'YEV, V. I., inzh.

Maxima angles of bite during the steady rolling process. Nauch. trudy DMI no.48:324-329 '62. (MIRA 15:10)

(Rolling mills)

BABUSHKIN, Aleksandr Afanas'yevich, dots.; BAZHULIN, Pavel Alekseyevich, prof.; KOROLEV, Fedor Andreyevich, prof.; LEVSHIN, Leonid Vadimovich, prof.; PROKOF'YEV, Vladimir Konstantinovich, prof.; STRIGANOV, Arkadiy Romanovich, doktor fiziko-matem. nauk; GOL'DENBERG, G.S., red.; GEORGIYEVA, G.I., tekhn. red.

[Spectrum analysis methods]Metody spektral'nogo analiza. [By] A.A.Babushkin i dr. Pod red. V.L.Levshina. Moskva, Izd-vo Mosk. univ., 1962. 508 p. (MIRA 16:2)
(Spectrum analysis)

PROKOF'YEV, V.I., kand.tekhn.nauk

Speeding up the construction of pumping and compressor stations.
Stroi.truboprov. 3 no.9:5-6 S '58. (MIRA 11:12)
(Pumping stations) (Compressors)

PROKOF'YEV, V.I., kand.tekhn.nauk

Role of welding in expanding the gas industry and building gas mains in 1959-1965. Svar.proizv. no.1:1-3 Ja '59.
(MIRA 12:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po stroitel'stvu magistral'nykh truboprovodov.
(Gas, Natural--Pipelines) (Pipelines--Welding)

PROKOF'YEV, V.I., kand.tekhn.nauk

Quality of protective coatings. Stroi.truboprov. 4 no.1:4-5 Ja '59. (MIRA 12:1)
(Pipelines--Corrosion) (Protective coatings)

PROKOF'YEV, V. I.

Zhukovskiy, Nikolay Yegorovich, 1847-1921

N. Ye. Zhukovskiy about V. P. Vetchinkin. Izv. AN SSSR Otd. tekh. anuk no. 5, 1952.

Monthly List of Russian Accessions, Library of Congress. November, 1952. Unclassified.

PROKOF'YEV, V.I.

N.E. Zhukovskii's evaluation of V.P.Vetchinkin's scientific work.
Trudy po ist.tekh. no.4:59-62 '54. (MLRA 7:9)
(Vetchinkin, Vladimir Petrovich, 1888-1950)

PROKOF'YEV, V.I.

Role of the Moscow Institute of Technology in the development of science and technology. Trudy po ist.tekh. no.7:99-125 '54.
(MLRA 7:7)

(Moscow--Technical education) (Technical education--Moscow)

Prokof'yev, V I

527N/5
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.P9

Moskovskoye vyssheye tekhnicheskoye uchilishe 125 let [125 years of Moscow technical college] Leningrad, Mashgiz, 1955.

473 p. Illus., Diagrs., Tables.

Bibliographical footnotes.

PROKOF'YEV, V.I., doktor tekhnicheskikh nauk; **SAVELOVA, A.A.**, kandidat tekhnicheskikh nauk.

The part of Moscow Technical College in the development of the theory of mechanisms and machines. [Trudy] M V T U no.65:5-10 '55. (MLRA 9:8)

(Mechanics, Analytic)

PROKOF'YEV, V.I.

Theories regarding machine parts. Trudy Inst.ist.est. i tekh. 8:156-165 '56. (Machinery) (MIRA 9:9)

PROKOF'YEV, V.I.

Professor A.S.Ershov. Trudy Inst.ist est. i tekh. 8:209-229 '56.
(Ershov, Aleksandr Stepanovich, 1818-1867) (MLRA 9:9)

L 41274-66 EWT(d)/EWT(m)/EWT(f)/EWP(c)/EWP(v)/T/EWP(t)/ETI/EWP(k)/EWP(h)/EWP(l) IJP(c) JD/WW/HW/JG/DJ/JT

ACC NR: AT6012089 (N) SOURCE CODE: UR/3177/65/021/000/0038/0052

AUTHOR: Chekmarev, A. P. (Academician AN UkrSSR); Saf'yan, M. M. (Professor); Meleshko, V. I. (Candidate of technical sciences); Prokof'yev, V. I. (Candidate of technical sciences); Avramenko, I. N. (Engineer); Dodoka, V. G. (Engineer); Ksenzuk, F. A. (Engineer) Kudin, D. P. (Engineer); Lola, V. N. (Engineer); Movshovich, V. S. (Engineer); Pavlishchev, V. B. (Engineer); Soroko, L. N. (Engineer); Sukhobrus, Ye. P. (Engineer); Kholodnyy, V. P. (Engineer); Yudin, M. I. (Engineer)

74
67
44

ORG: none

TITLE: Improvements in the techniques of production of Khl8N10T cold-rolled wide-strip steel at the Zaporozhstal' Plant

SOURCE: Dnepropetrovsk. Institut chernoy metallurgii. Trudy, v. 21, 1965. Prokatnoye proizvodstvo (Welding production), 38-52

TOPIC TAGS: stainless steel, bright stock lubricant, metal rolling, sheet metal, industrial plant / Khl8N10T stainless steel, P-28 bright stock lubricant

ABSTRACT: On increasing to 11.8 tons from the previous 10.3 tons the weight of the ingots

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ACC NR: AT6012089

of Kh18N10T stainless steel used to produce 1000 mm wide sheets, the Zaporozhstal' Plant found it possible to reduce by 40-50 kg/mm^2 the wastage of metal during slabbing. Other innovations introduced in recent years at this plant include: fettling, flame scarfing and planing of ingot surfaces so as to eliminate defects of metallurgical origin prior to slabbing. These measures, along with improvements in the ingot reheating regime, have made it possible to increase the productivity of slabbing mills by 15-20%. The ingots themselves are cone-shaped in order to optimize the conditions of crystallization of the molten metal. After trimming and heating to 1050-1300°C the slabs proceed to a continuous strip mill where they are rolled into 1000 mm wide strip. By introducing the cold rolling of this strip in a reversible four-high mill with a reduction of 85% and by abandoning the practice of intermediate quenching during the production of 0.8-1.4 mm thick sheets rolled from 3.0 mm thick stock, using P-28 bright stock (highly viscous mineral oil) as the lubricant, using highly polished rolls, and increasing the convexity of the rolls to offset the increase in roll pressure, and thus streamlining the rolling techniques to an extent at which it became possible to roll in 13 passes 0.8 mm thick strip without overloading the rolls and main drive, the Zaporozhstal' Plant has found it possible to increase by 81% the productivity of its sheet mill and by 180%, the productivity of its reversible cold-rolling mill. The annual savings produced by these innovations amount to: for the slabbing-mill shop, 162,000 rubles; for the sheet-mill shop, 91,000 rubles; for the cold rolling shop, 719,000 rubles. Orig. art. has: 3 figures, 9 tables.

SUB CODE: 13, 11/ SUBM DATE: none/ ORIG REF: 015

Card 2/2

IDASHKIN, S.I., kand. tekhn. nauk; IVANOVA, K.Ye., inzh.;
PROKOF'YEV, V.I., red.; RAZUMOVSKAYA, T.Ya., red.;
DEMIDOV, Ya.F., tekhn. red.

[Collection of abstracts of research work conducted during 1960 and 1961] Sbornik annotatsii nauchno-issledovatel'skikh rabot za 1960-1961 gg. Pod red. V.I.Prokof'eva. Moskva, 1962. 57 p. (MIRA 17:3)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut po stroitel'stvu magistral'nykh truboprovodov.

PROKOF'YEV, V.I., mashinist-instruktor; BARTENEV, A.V., mashinist

Advice to the operator of the VMEL switcher locomotive. Elek. i tepl. tiaga 7 no.9:36 S '63. (MIRA 16:10)

1. Depo Leningrad-Varshavskiy.

PROKOF'YEV, V.I., mashinist-instruktor

Faults occuring during the start of the engine of the VME1 diesel switch locomotive. Elek. i tepl. tiaga 7 no.6:33-34 Je '63. (MIRA 16:9)

1. Depo Leningrad-Varshavskiy.

(Diesel locomotives)

KAZANSKIY, Nikolay Vasil'yevich; PROKOF'YEV, Vasiliy Ivanovich;
IVANOV, V.P., red.; DOLGOVA, K.N., red. izd-va; KHENOKH,
F.M., tekhn. red.

[Manual on safety measures for the demolition of buildings and structures] Pamiatka po tekhnike bezopasnosti pri razborke zdanii i sooruzhenii. Moskva, Izd-vo MKKh, 1963. 74 p.
(MIRA 16:7)

(Building—Safety measures)

CHEKMAREV, A.P., akademik; PROKOF'YEV, V.I., inzh.

Specific metal pressure on rolls during the hot rolling of steel considering the speed and degree of deformation. Trudy Inst. chern. met. AN URSR 15:3-11 '61. (MIRA 15:2)

1. Akademiya nauk USSR (for Chekmarev).
(Rolling (Metalwork))
(Deformations (Mechanics))

CHEKMAREV, A.P., akademik; PROKOF'YEV, V.I., inzh.

Speed of deformation during rolling. Trudy Inst. chern. met. AN URSR 15:12-15 '61. (MIRA 15:2)

1. Akademiya nauk USSR (for Chekmarev).
(Rolling (Metalwork))
(Deformations (Mechanics))

PROKOF'YEV, V.I., kand.tekhn.nauk

Main research trends of the All-Union Scientific Research Institute of Pipeline Construction. Stroi.truboprov. 5 no.11:9-11 N '60. (MIRA 13:11)

(Pipelines)

PROKOF'YEV, V.I., kand.tekhn.nauk; FAL'KEVICH, A.S., kand.tekhn.nauk

New technical requirements for pipeline construction. Stroi.
truboprov. 5 no.1:3-6 Ja '60. (MIRA 13:8)
(Pipelines)

PROKOF'YEV, V.I.

Outstanding protagonist of progressive natural science. Priroda 41 no.7:
3-12 Jl '53.
(MLRA 6:6)
(Pisarev, Dmitrii Ivanovich, 1841-1868)

PROKOF'YEV, Vasiliy Ivanovich.

Moscow Order of Labor Red Banner Higher Technical School imeni Bauman. Academic degree of Doctor of Technical Sciences, based on his defense 14 December 1954 in the Council of the Inst of History of Natural Science and Techniques, Acad Sci USSR, of his dissertation entitled: "Role of the Moscow Higher Technical School in the Development of Science, Techniques, and Higher Technical Education."

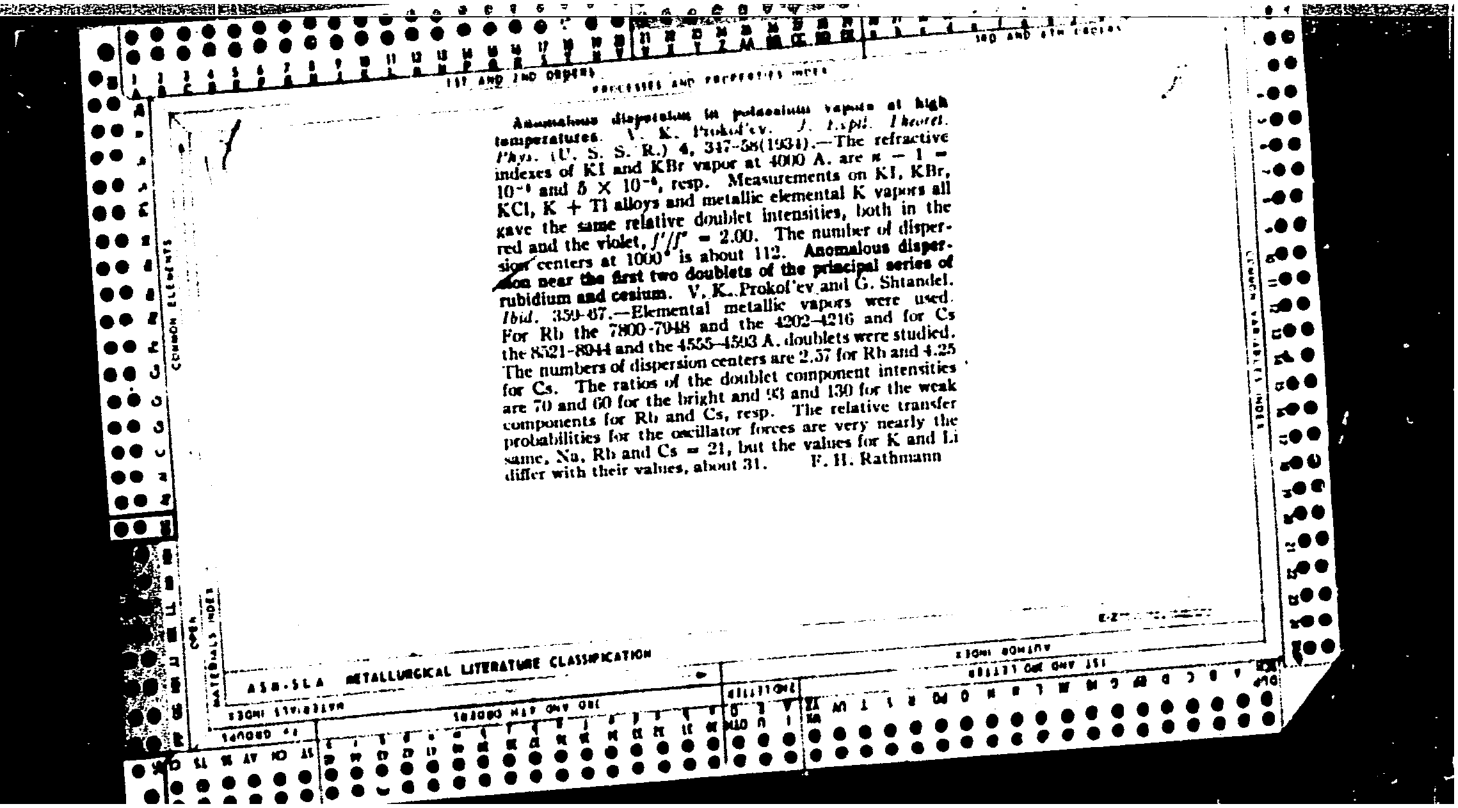
Academic degree and/or title: Doctor of Sciences

SO: Decisions of VAK, List no. 12, 28 May 55, Byulleten' MVO SSSR, No. 15, Aug 56, Moscow, pp. 5-24, Uncl. JPRS/NY-537

PROKOF'YEV, V. I. (Engr)

PROKOF'YEV, V. I. (Engr) -- "Investigation of the Relationship of the Controlling System of an Engine in a Self-Propelling Combine S-4." Sub 18 Jun 52, Moscow Inst of Mechanization and Electrification of Agriculture imeni V. M. Molotov. (Dissertation for the Degree of Candidate in Technical Sciences)

SO: Vecheraaya Moskva, January-December 195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Anomalous dispersion in potassium vapors at high temperatures. V. K. Prokof'ev. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 4, 347-58(1934).—The refractive indexes of KI and KBr vapor at 4000 A. are $n - 1 = 10^{-4}$ and 6×10^{-4}, resp. Measurements on KI, KBr, KCl, K + Tl alloys and metallic elemental K vapors all gave the same relative doublet intensities, both in the red and the violet, $f'/f'' = 2.00$. The number of dispersion centers at 1000° is about 112.

Anomalous dispersion near the first two doublets of the principal series of rubidium and cesium. V. K. Prokof'ev and G. Shtandel. *Ibid.* 359-67.—Elemental metallic vapors were used. For Rb the 7800-7948 and the 4202-4216 and for Cs the 8521-8944 and the 4555-4593 A. doublets were studied. The numbers of dispersion centers are 2.57 for Rb and 4.25 for Cs. The ratios of the doublet component intensities are 70 and 60 for the bright and 93 and 130 for the weak components for Rb and Cs, resp. The relative transfer probabilities for the oscillator forces are very nearly the same, Na, Rb and Cs = 21, but the values for K and Li differ with their values, about 31. F. H. Rathmann

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B-1-4

Application of spectral analysis to investigation of minerals and ores. V. K. Prokofiev (Bull. Acad. Sci. U.R.S.S., 1937, Sér. Phys., 113—126).—A portable type of spectrograph with a sylvine prism, and its use for the detection and determination of Sn, B, and Ni in rocks, are described. J. S. A.

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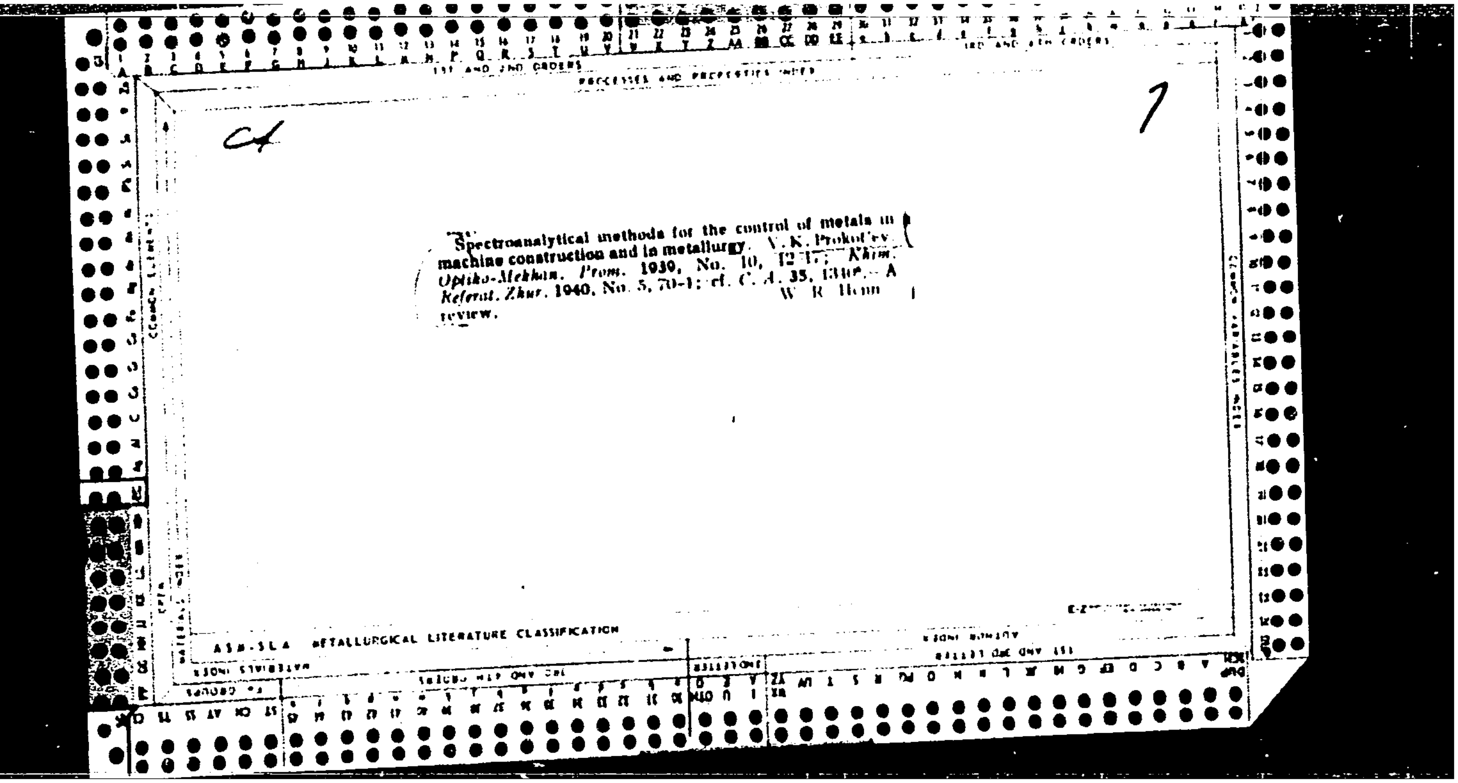
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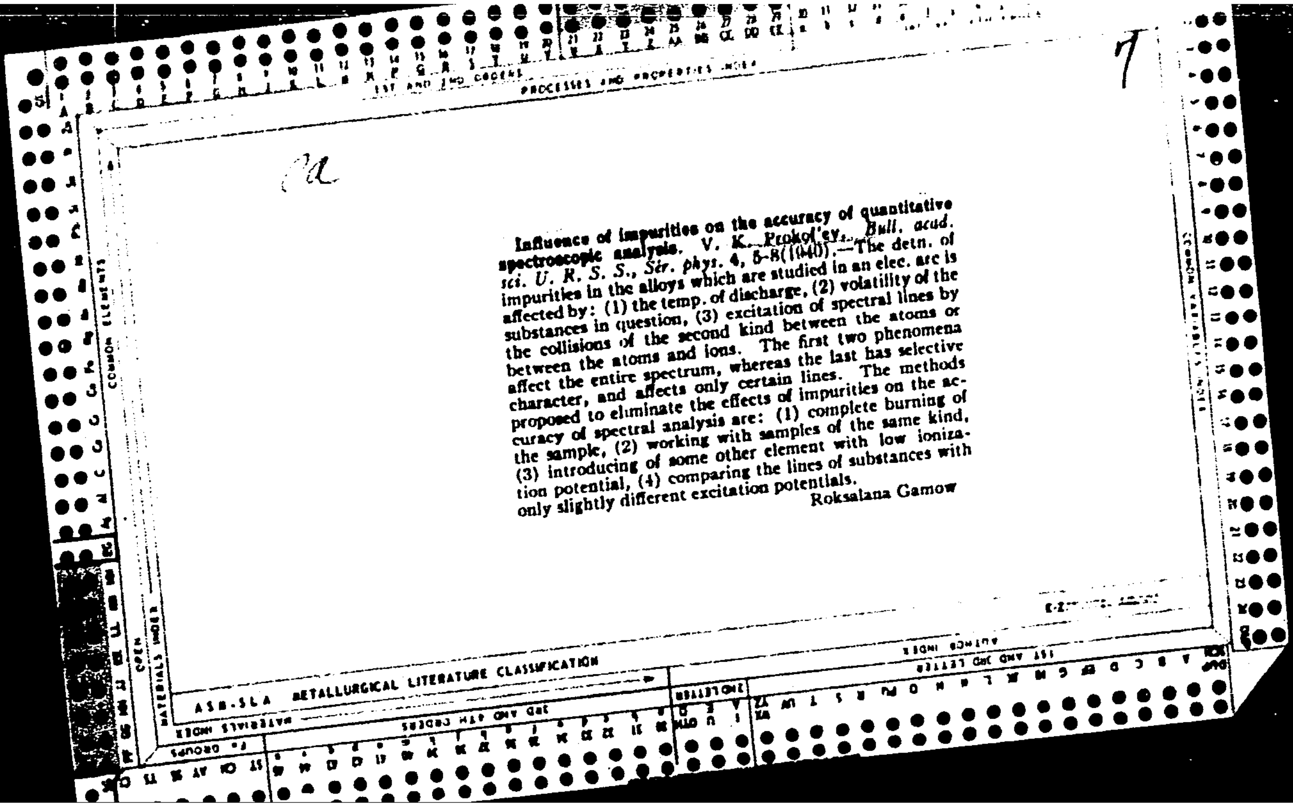
C4

1

Spectroanalytical methods for the control of metals in machine construction and in metallurgy. V. K. Prokof'ev. *Optiko-Mekhan. Prom.* 1939, No. 10, 12-17; *Khim. Referat. Zhur.* 1940, No. 5, 70-1; cf. *C. A.* 35, 1310e.—A review. W. R. Henn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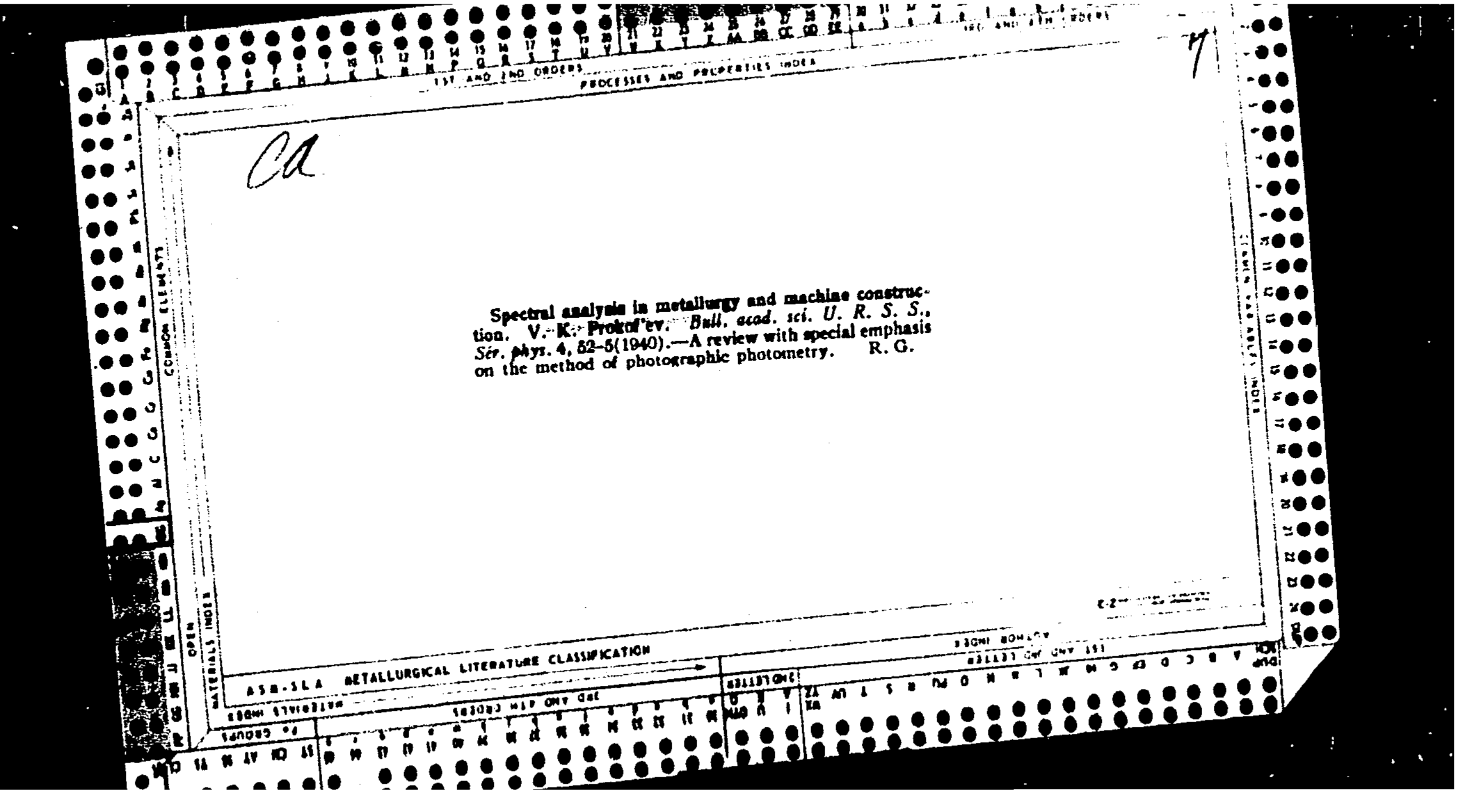
1ST AND LETTER

Influence of impurities on the accuracy of quantitative spectroscopic analysis. V. K. Prokof'ev. *Bull. acad. sci. U. R. S. S., Sér. phys.* 4, 5-8(1940).—The detn. of impurities in the alloys which are studied in an elec. arc is affected by: (1) the temp. of discharge, (2) volatility of the substances in question, (3) excitation of spectral lines by the collisions of the second kind between the atoms or between the atoms and ions. The first two phenomena affect the entire spectrum, whereas the last has selective character, and affects only certain lines. The methods proposed to eliminate the effects of impurities on the accuracy of spectral analysis are: (1) complete burning of the sample, (2) working with samples of the same kind, (3) introducing of some other element with low ionization potential, (4) comparing the lines of substances with only slightly different excitation potentials.

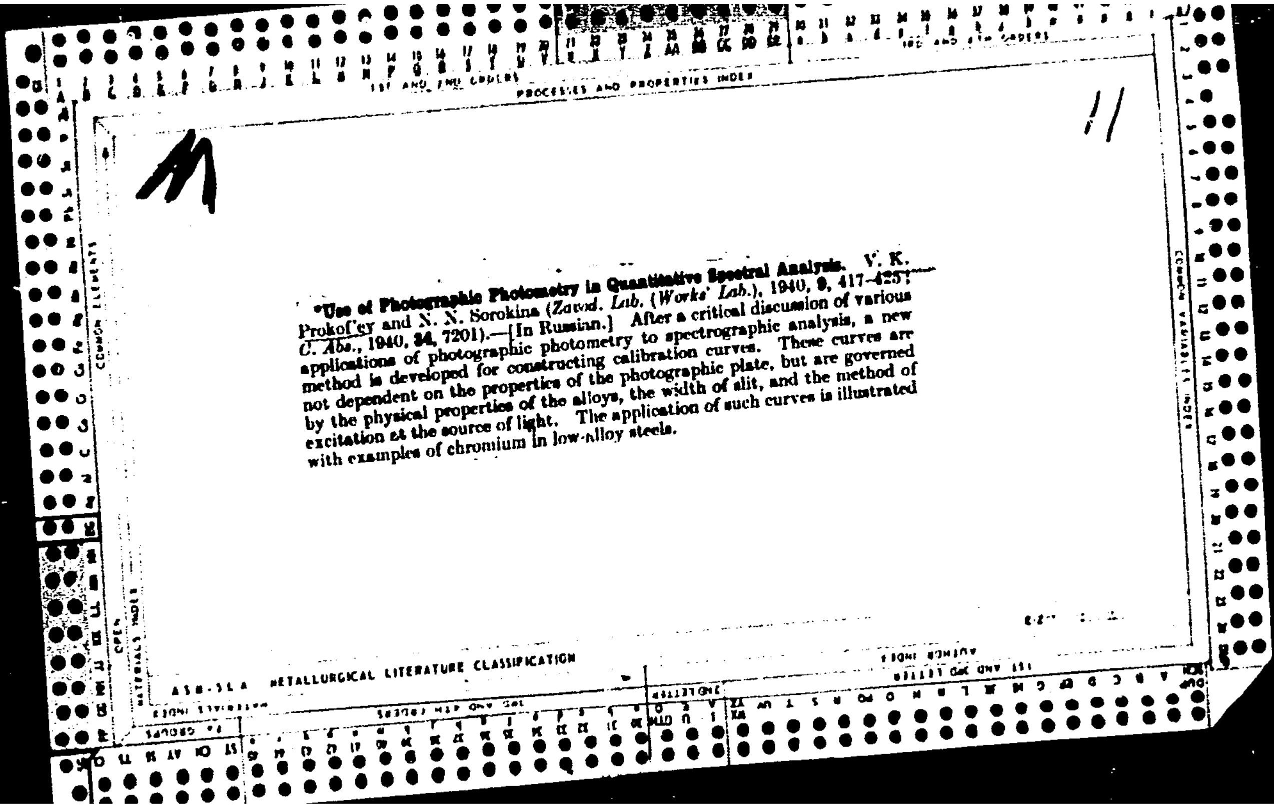
Roksalana Gamow



Ca

Spectral analysis in metallurgy and machine construction. **V. K. Prokof'ev.** *Bull. acad. sci. U. R. S. S., Sér. phys.* 4, 82-5(1940).—A review with special emphasis on the method of photographic photometry. R. G.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



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Use of Photographic Photometry in Quantitative Spectral Analysis. V. K. Prokof'ev and N. N. Sorokina (*Zavod. Lab.* (*Works' Lab.*), 1940, **9**, 417–425; *C. Abs.*, 1940, **34**, 7201).—[In Russian.] After a critical discussion of various applications of photographic photometry to spectrographic analysis, a new method is developed for constructing calibration curves. These curves are not dependent on the properties of the photographic plate, but are governed by the physical properties of the alloys, the width of slit, and the method of excitation at the source of light. The application of such curves is illustrated with examples of chromium in low-alloy steels.

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CA

1

Construction of calibration curves for a steelometer. V. K. Prokof'ev. *Zavodskaya Lab.* 9, 1267-9(1940).—Illustrated with detns. of (1) Fe in Al alloys and (2) Cr in steels.
B. Z. Kamich

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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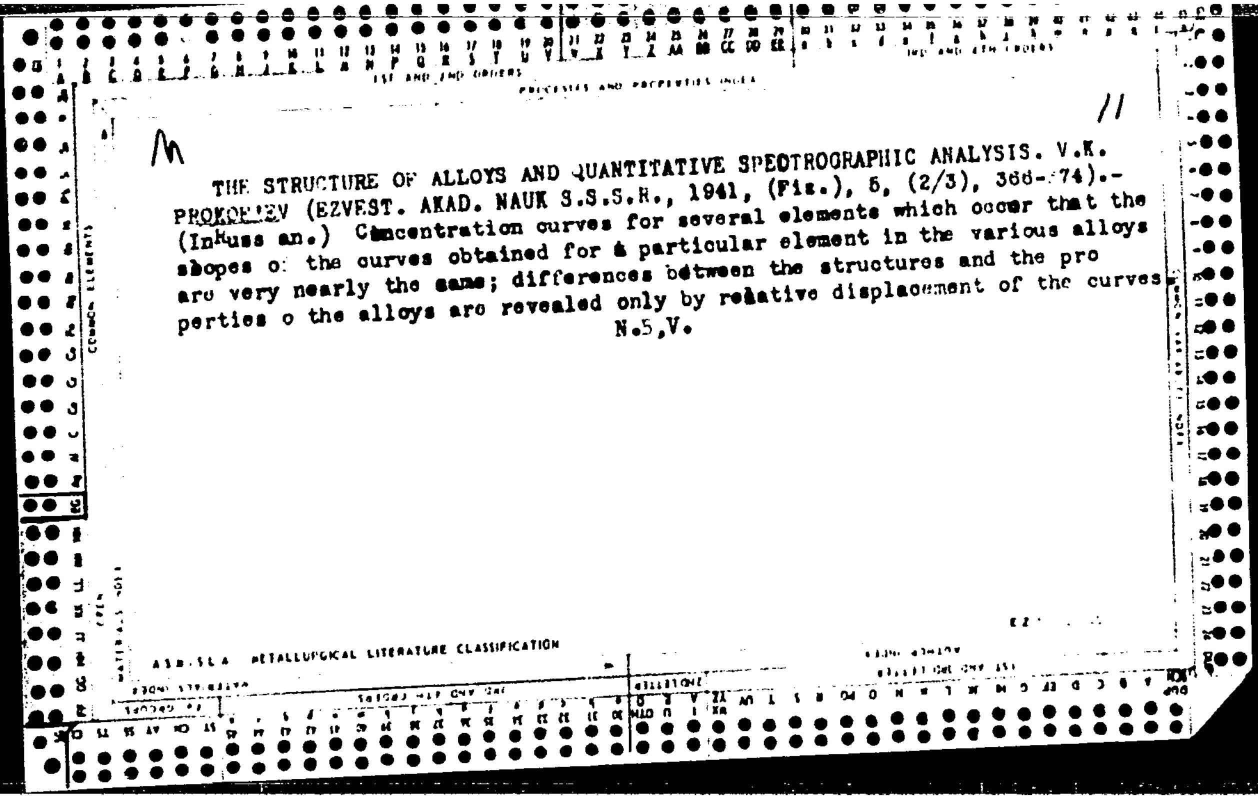
BC

Stylometric determination of silicon in steel, brass, and duralumin. V. Prokofiev (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, 28, 443—447).—The general formula log (tan² a − i) = b log c + k is derived for spectrometric determination of elements in alloys with the "stylometer"; a is the stylometer analyser angle, and i a const. depending on the position of the fixed spark electrode and the spectrum "background." b and k are consts. characteristic of the element determined (concn. c) and of the nature and structure of the alloy, respectively. If b is known, determination of an element in a given type of alloy requires only one calibration measurement, which gives k. The formula is verified by data for Si in 0·16—1·8% Si steel, Si-bronze, and duralumin.

A. J. E. W.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION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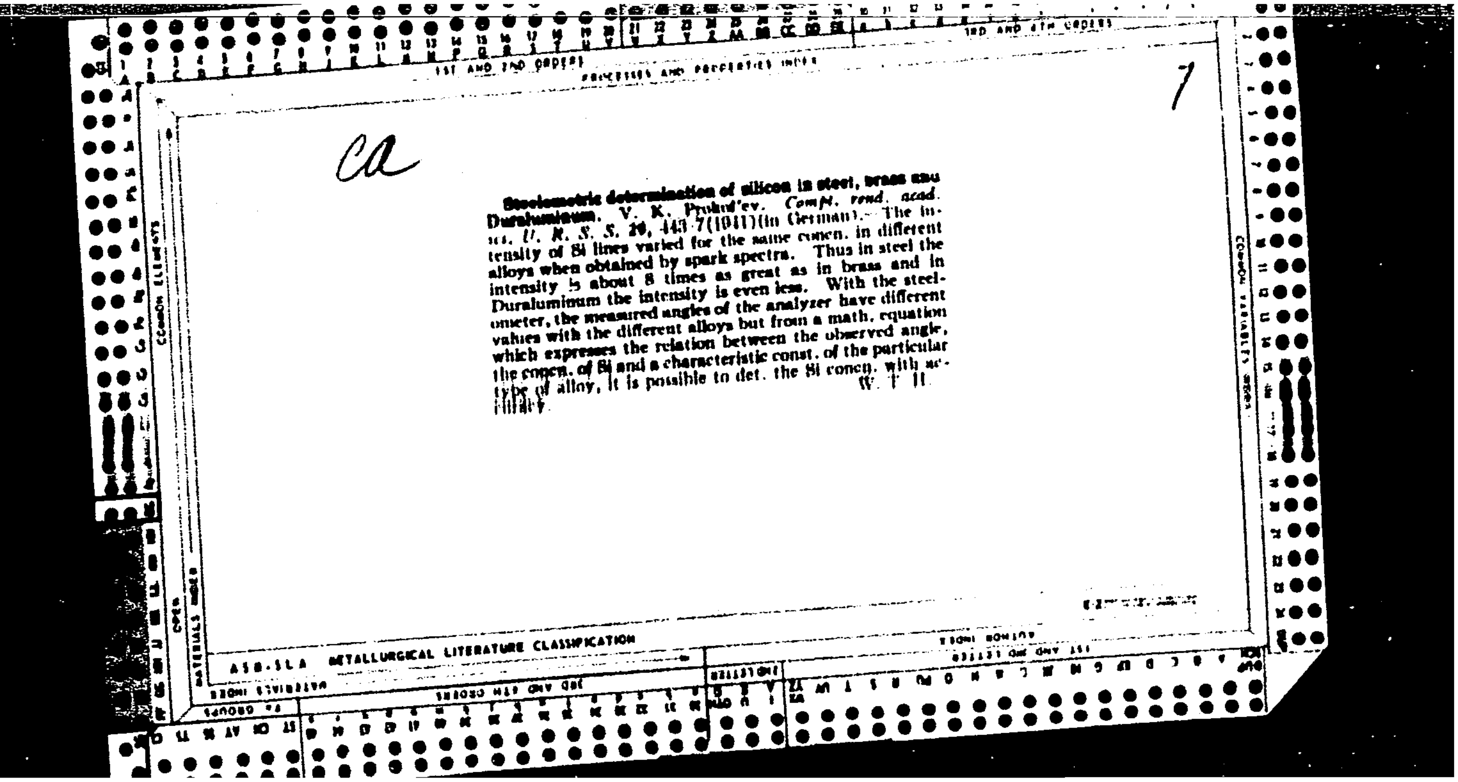
11

THE STRUCTURE OF ALLOYS AND QUANTITATIVE SPECTROGRAPHIC ANALYSIS. V.K.
PROKOFIEV (EZVEST. AKAD. NAUK S.S.S.R., 1941, (Fiz.), 5, (2/3), 366-374).-
(In Russian.) Concentration curves for several elements which occur that the
shapes o: the curves obtained for a particular element in the various alloys
are very nearly the same; differences between the structures and the pro
perties o the alloys are revealed only by relative displacement of the curves.

N.S.V.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ca

7

Steelometric determination of silicon in steel, brass and Duraluminum. V. K. Prokof'ev. *Compt. rend. acad.*
sci. *U. R. S. S.* 30, 443-7(1941)(in German).—The in-
tensity of Si lines varied for the same concn. in different
alloys when obtained by spark spectra. Thus in steel the
intensity is about 8 times as great as in brass and in
Duraluminum the intensity is even less. With the steel-
ometer, the measured angles of the analyzer have different
values with the different alloys but from a math. equation
which expresses the relation between the observed angle,
the concn. of Si and a characteristic const. of the particular
type of alloy, it is possible to det. the Si concn. with ac-
curacy. W. T. H.

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CA

545.822 1704

Quantitative analysis for impurities by intensity estimation of one spectral line. PROKOFYEV, V. K., SVENTITSKY, N. S., AND MAGARINOS, E. L. C.R. (Doklady) Acad. Sci. URSS, 34, 8, pp. 224–227, 1942.—By using an a.c. arc as the light source, spectral analysis by the method of abs. intensity yields quantitative estimations of impurities, of sufficient accuracy for industrial purposes. The accuracy was exemplified in a series of analyses for Pb in the alloy LS-59-1 (containing 0·95% Pb). The probable error was calculated from 100 determinations and found to be 5·2% for an individual measurement, giving 3% for an average of 3 measurements.

A. E. T.

CHEMICAL ELEMENTS

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3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

CA

1

Spectral analysis under industrial conditions. V. K. Prokof'ev. *Trudy Vsesoyuz. Konferentsii Anal. Khim.* 2, 175-87(1943).—A new ultraviolet spectrograph and a microphotometer are described. The spectrograph has a quartz-fluorite collimator objective with a 30-mm. aperture and a focal distance of 400 mm., and a double quartz camera objective that throws the image of the spectrum on a plane at an angle of 41° with the optical axis of the camera. The prism is made of synthetic sylvite (KCl), with faces protected from the action of the atmosphere by flat parallel quartz plates. The length of the spectrum from 2200 to 7600 A. is 23 mm. In the microphotometer for spectral lines the light from a 12-v. (25-w.) light reflected from a reflector passes through a complex condenser. The prism directs the beam of light into the objective of the microscope. The 2nd objective of the microscope, through a focusing mag. lens, magnifies by 20 times the image of the spectral lines of the photographic plate on the microphotometer slit. A Se photoelement, placed behind the slit, is connected to a mirror galvanometer with a sensitivity of 10^{-9}. A telescope and a scale are used for observing the readings and a supplementary slit with dense red gelatin filters is used to shut off excessive light on the condenser. Thirteen references.

W. R. Henn

COMMON ELEMENTS

OPEN

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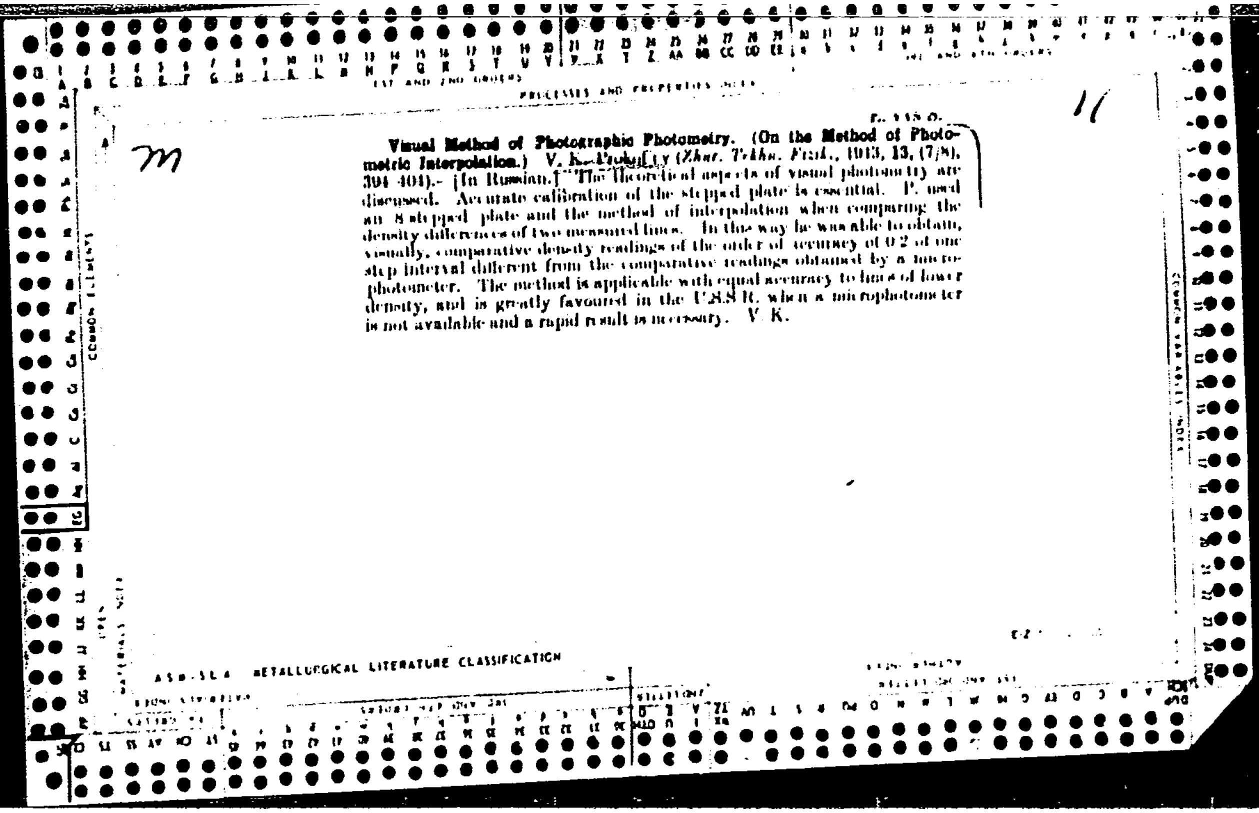
3RD AND 4TH ORDERS

2ND LETTER

AUTHOR INDEX

1ST AND 2ND LETTER

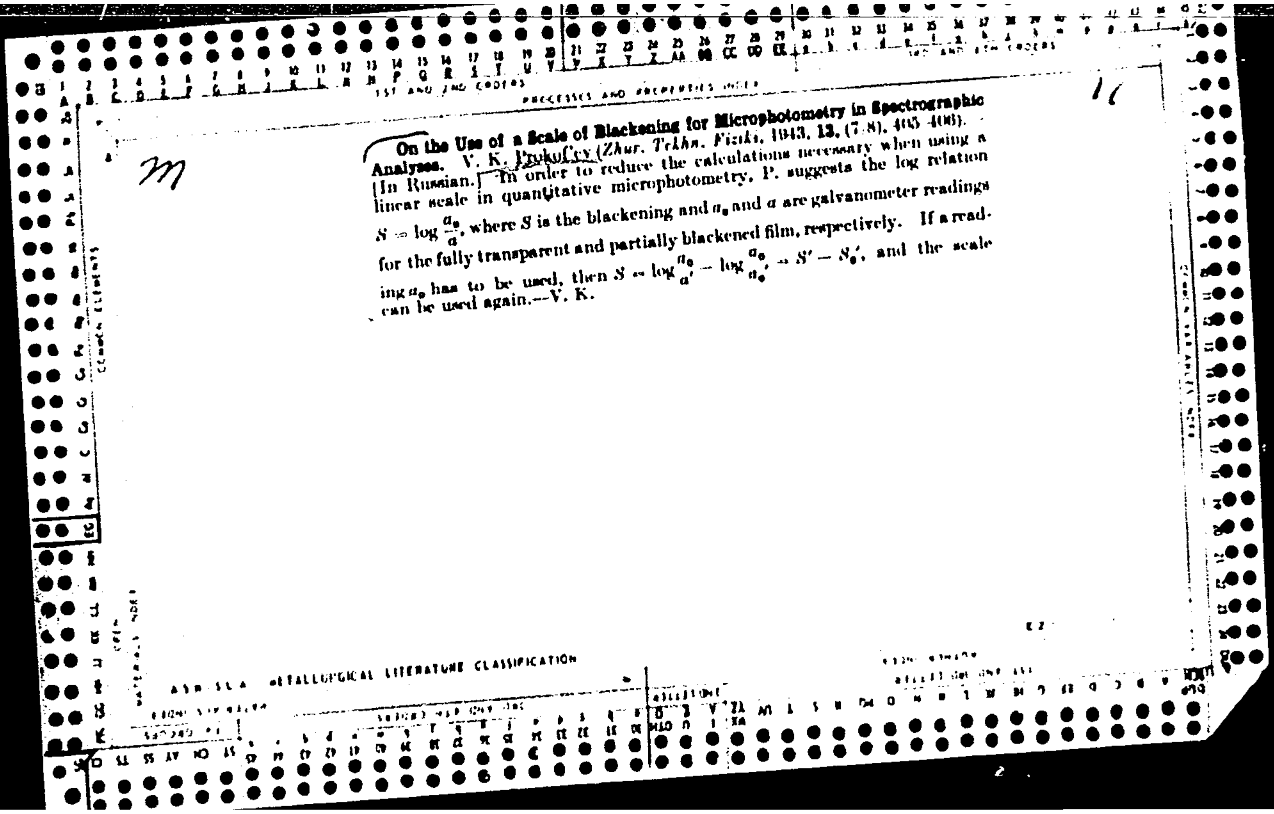


1ST AND 2ND ORDERS
3RD AND 4TH ORDERS
PROCESSES AND PROPERTIES INDEX

m

11

Visual Method of Photographic Photometry. (On the Method of Photometric Interpolation.) V. K. Prokofiev (*Zhur. Tekhn. Fiz.*, 1943, 13, (7/8), 394-401).- [In Russian.] The theoretical aspects of visual photometry are discussed. Accurate calibration of the stepped plate is essential. P. used an 8 stepped plate and the method of interpolation when comparing the density differences of two measured lines. In this way he was able to obtain, visually, comparative density readings of the order of accuracy of 0.2 of one step interval different from the comparative readings obtained by a microphotometer. The method is applicable with equal accuracy to lines of lower density, and is greatly favoured in the U.S.S.R. when a microphotometer is not available and a rapid result is necessary. V. K.



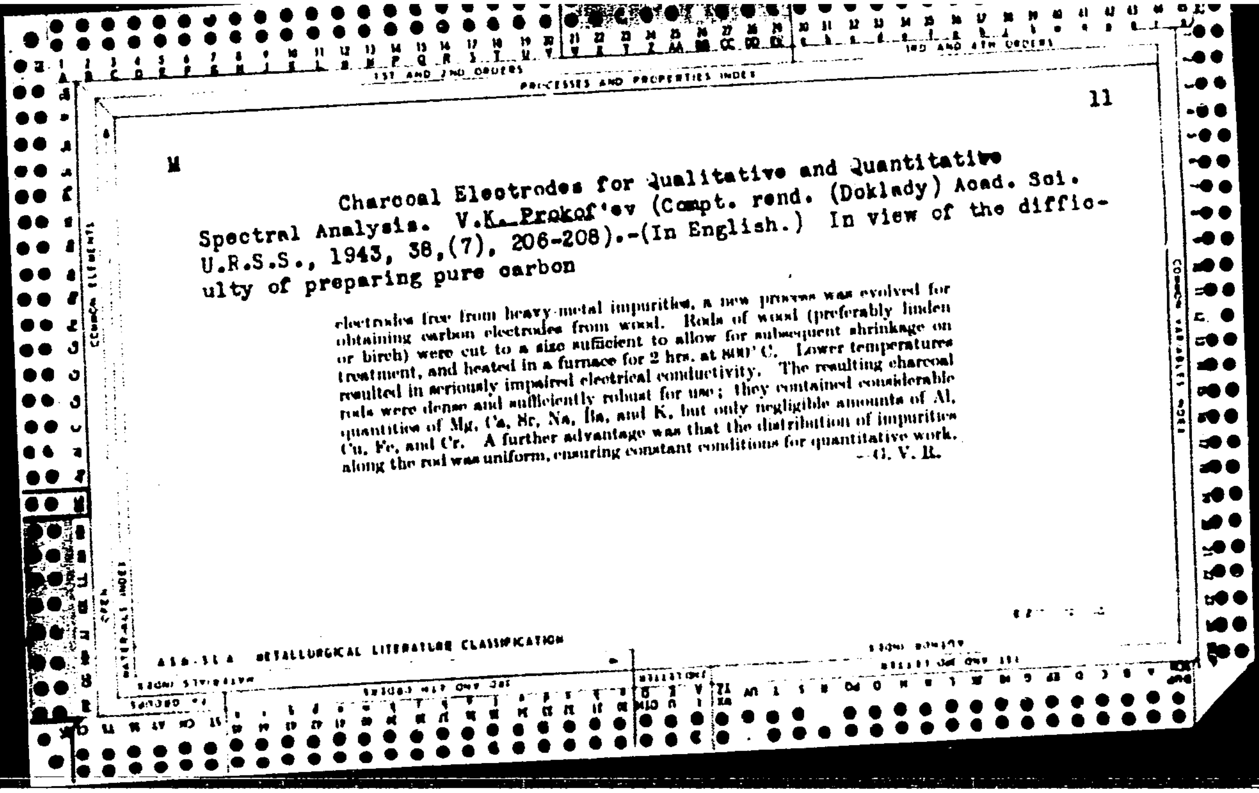
PROCESSES AND PROPERTIES INDEX

m

11

On the Use of a Scale of Blackening for Microphotometry in Spectrographic Analyses. V. K. Prokof'ev (*Zhur. Tekhn. Fiziki*, 1943, **13**, (7/8), 405-406). [In Russian.] In order to reduce the calculations necessary when using a linear scale in quantitative microphotometry, P. suggests the log relation $S = \log \frac{a_0}{a}$, where S is the blackening and a_0 and a are galvanometer readings for the fully transparent and partially blackened film, respectively. If a reading a_0 has to be used, then $S = \log \frac{a_0}{a'} - \log \frac{a_0}{a_0'} = S' - S_0'$, and the scale can be used again.—V. K.

METALLURGICAL LITERATURE CLASSIFICATION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11
M

Charcoal Electrodes for Qualitative and Quantitative Spectral Analysis. V.K. Prokof'ev (Compt. rend. (Doklady) Acad. Sci. U.R.S.S., 1943, 38,(7), 206-208).-(In English.) In view of the difficulty of preparing pure carbon electrodes free from heavy-metal impurities, a new process was evolved for obtaining carbon electrodes from wood. Rods of wood (preferably linden or birch) were cut to a size sufficient to allow for subsequent shrinkage on treatment, and heated in a furnace for 2 hrs. at 800° C. Lower temperatures resulted in seriously impaired electrical conductivity. The resulting charcoal rods were dense and sufficiently robust for use; they contained considerable quantities of Mg, Ca, Sr, Na, Ba, and K, but only negligible amounts of Al, Cu, Fe, and Cr. A further advantage was that the distribution of impurities along the rod was uniform, ensuring constant conditions for quantitative work. —G. V. R.

1ST AND 2ND ORDERS

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CA

3

Method of photometric interpolation with mixed spectra. V. K. Prokof'ev. *Compt. rend. acad. sci. U.R.S.S.* 40, 313-16(1943). –A spectrum of sample of concn. C_1 is photographed with a stepped reducer. Then plate is shifted in the direction of dispersion and vertically 0.3 to 0.5 mm., and another spectrum is photographed of a different sample of concn. C_2. The second spectrum is thus located in the intervals between the steps of the first spectrum. Thus spectral lines lying close together, and of the same wave length, can be measured photometrically. The method permits a comparison of lines far removed from one another in the spectrum, including those lying in regions with varying values of contrast factor of the photographic plate.

H. G. McCann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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BC

C-4

COMMON ELEMENTS

1197. [illegible] [illegible] [illegible] absorption spectra by the method of [illegible] [illegible]. V. K. Prokofiev and O. N. [illegible] ([illegible] [illegible], U.R.S.S., 1937, 15, 7—9).— The use of [illegible] [illegible] (cf. B., 1937, 697) in conjunction with the method of displaced spectra proposed by Müller (A., 1936, 1039) is described. J. F. H.

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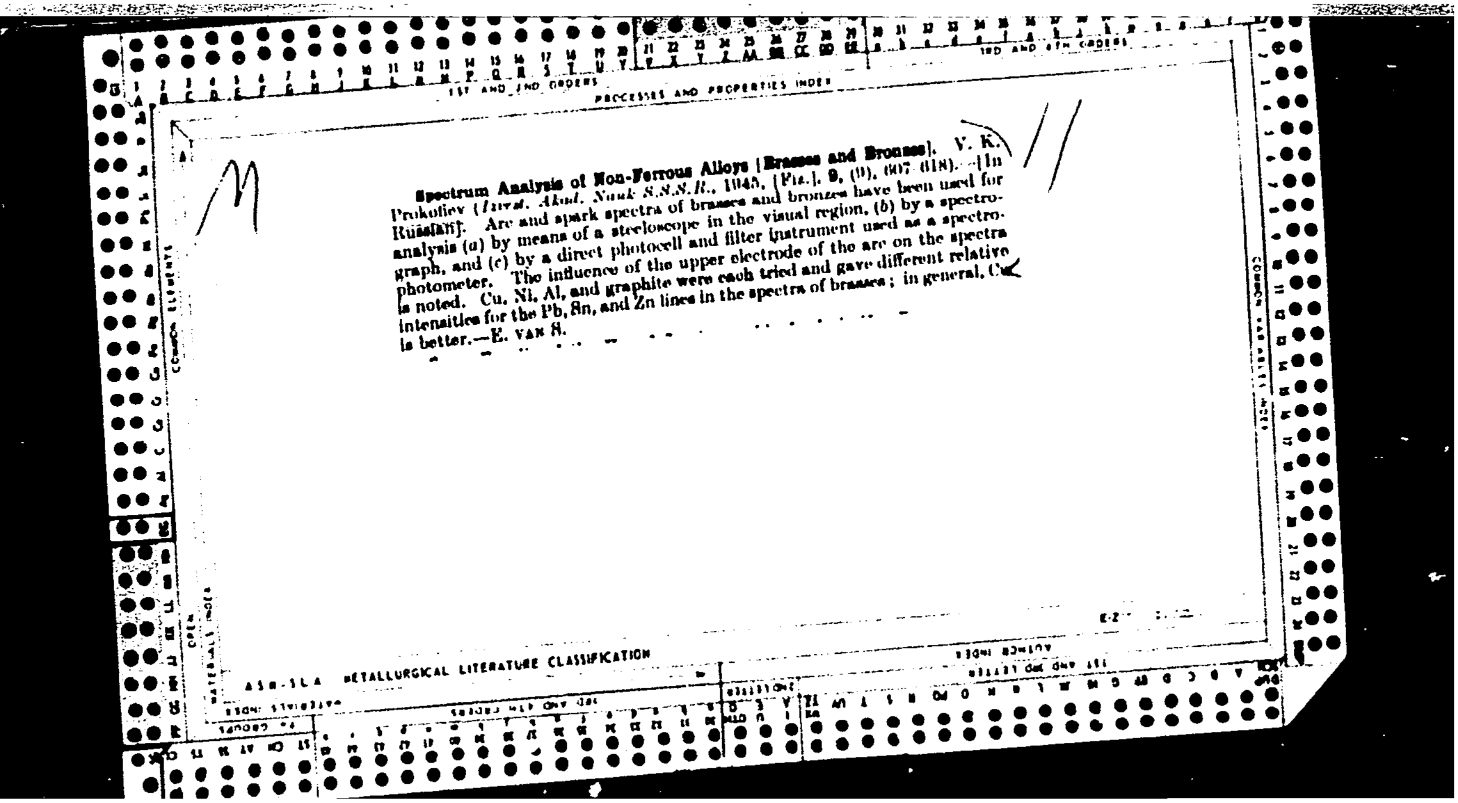
7

Quantitative analysis from absorption spectra by the method of photometric interpolation. V. K. Prokof'ev and O. N. Setkina. *Compt. rend. acad. sci. U.R.S.S.* 42, 7-9; *Doklady Akad. Nauk S.S.S.R.* 42, 7-10(1944).—Absorption analysis can be accurately carried out by the method given in C. A. 30, 4005. H. G. McCann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



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3RD AND 4TH ORDERS

M

Spectrum Analysis of Non-Ferrous Alloys [Brasses and Bronzes]. V. K. Prokofiev (*Izvest. Akad. Nauk S.S.S.R.*, 1945, [Fiz.], 9, (6), 607–618). [In Russian]. Arc and spark spectra of brasses and bronzes have been used for analysis (*a*) by means of a steeloscope in the visual region, (*b*) by a spectrograph, and (*c*) by a direct photocell and filter instrument used as a spectrophotometer. The influence of the upper electrode of the arc on the spectra is noted. Cu, Ni, Al, and graphite were each tried and gave different relative intensities for the Pb, Sn, and Zn lines in the spectra of brasses; in general, Cu is better.—E. VAN S.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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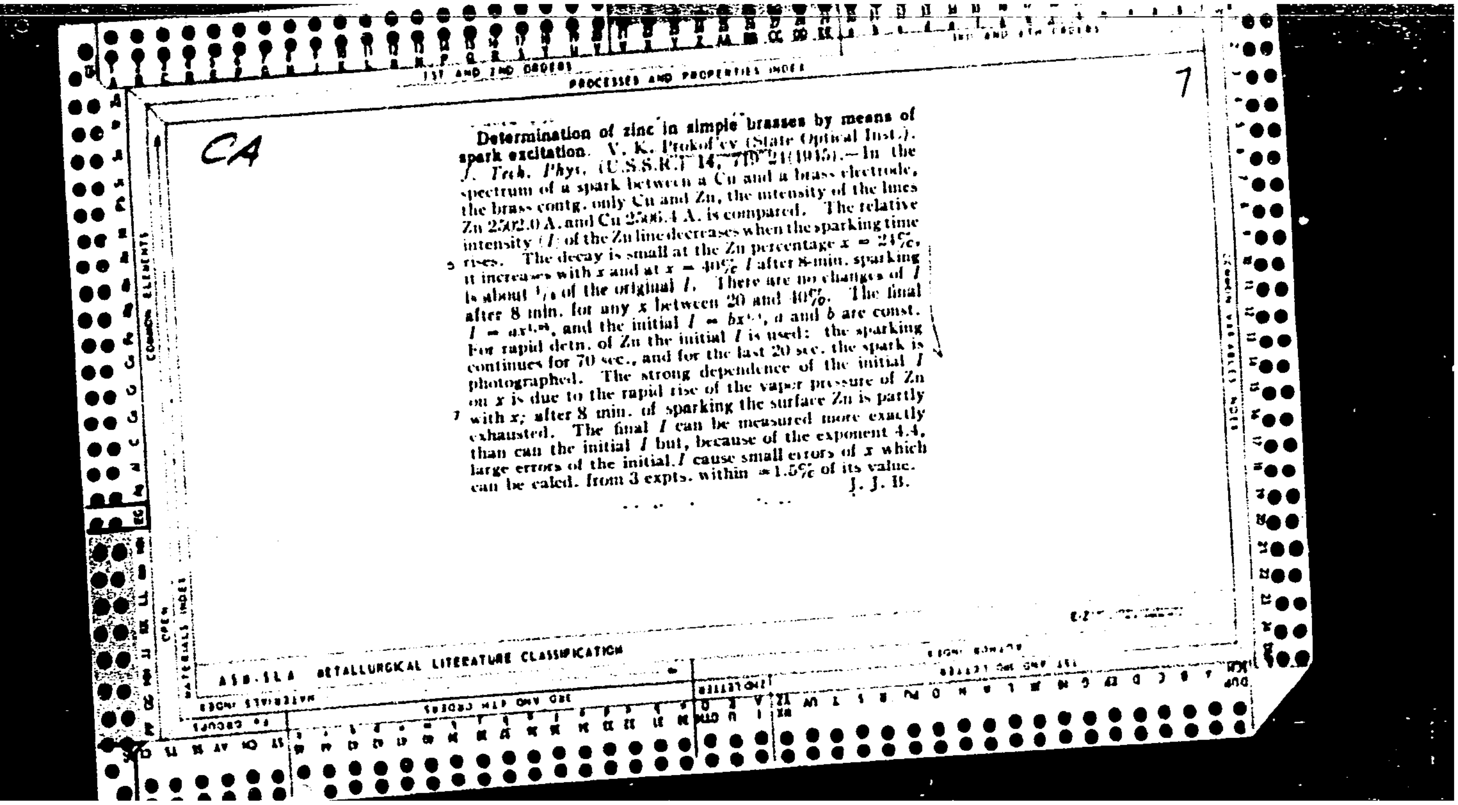
7

Spectral analysis of difficultly excitable elements. V. K. Prokof'ev. *Bull. acad. sci. U.R.S.S., Sér. phys.* 9, 601-8(1945).—The spectrographic detn. of halides, S, C, and gaseous O_2, H_2, and N_2 is reviewed. Halides and S compds. in aq. soln. can be detd. by means of an a.-c. arc, with a large-capacity shunt, in a circuit with low self-inductance; both electrodes are of Cu. The soln. is dropped on to the lower electrode, or the lower electrode is made in the form of a rotating disk which dips into the soln. Observations are taken in the region near the moist electrode. An aperiodic discharge of brief flashes is obtained. Spectral lines clearly seen under these conditions are: S 5454, 5432, 5640, 5632; C 4267; P 5253, 5426, 5409; I 5625, 5690, 5161, 5245, 5101; Cl 4904, 4819, 4810, 4794; F 6856, 6902; Br 4704, 4785, 5332. Br in KBr soln. is detected at a concn. of 0.001%; S in $CuSO_4$ soln. is detd. down to a concn. of 0.002% S from the lines S 5454 and Cu 5463 A. though not in presence of dichromate ion. C in steel and cast Fe is detd. by the spark discharge, with either the diffuse line 4267, when the intensity has to be summed over the whole contour of the line, or the sharp line 2297 in the spectrum given by a large Hilger spectrograph. In cast Fe the different state of the C has no effect on the intensity of the lines and all the points in the graph obtained lie on one straight line.

B. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION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ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

7

Determination of zinc in simple brasses by means of spark excitation. V. K. Prokof'ev (State Optical Inst.). *J. Tech. Phys.* (U.S.S.R.) 14, 719-21(1945).—In the spectrum of a spark between a Cu and a brass electrode, the brass contg. only Cu and Zn, the intensity of the lines Zn 2502.0 A. and Cu 2506.4 A. is compared. The relative intensity (*I*) of the Zn line decreases when the sparking time
5 rises. The decay is small at the Zn percentage $x = 24\%$, it increases with *x* and at $x = 40\%$ *I* after 8-min. sparking is about $^1/_4$ of the original *I*. There are no changes of *I* after 8 min. for any *x* between 20 and 40%. The final $I = ax^{1.88}$, and the initial $I = bx^{4.4}$, *a* and *b* are const. For rapid detn. of Zn the initial *I* is used: the sparking continues for 70 sec., and for the last 20 sec. the spark is photographed. The strong dependence of the initial *I* on *x* is due to the rapid rise of the vapor pressure of Zn
7 with *x*; after 8 min. of sparking the surface Zn is partly exhausted. The final *I* can be measured more exactly than can the initial *I* but, because of the exponent 4.4, large errors of the initial *I* cause small errors of *x* which can be calcd. from 3 expts. within ±1.5% of its value.

J. J. B.

Spectrochemical determination of small quantities of boron in steels. V. K. Prokof'ev. *Doklady Akad. Nauk S.S.S.R.* **50**, 185-7(1945).—C is superior to Cu, Al, and steel as an opposite electrode for this detn.; the only B-free C obtainable was birch charcoal. By using a 10-15 amp. a.-c. arc, P. detd. B in the 0.001-0.003% range by measuring B 2496.78.

Cyrus Feldman

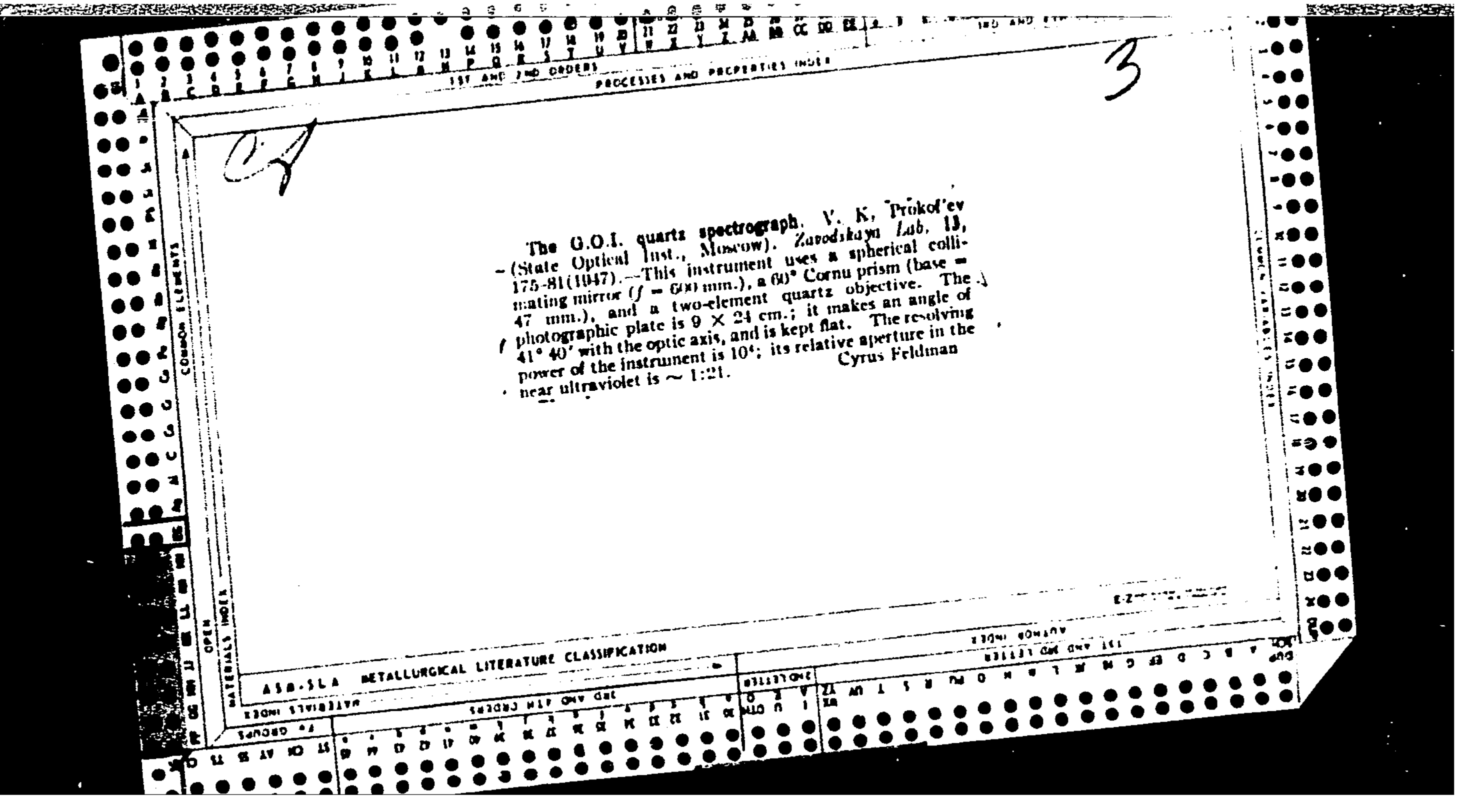
PROKOF'YEV, V. K. PA 24T97

USSR/Physics May/Jun 1947
Spectrum Analysis
Vaporizers

"Mechanism of the Vaporization of Materials with Constant Electrodes in Spectroanalytical Sources of Light," V. K. Prokof'yev, 8½ pp

"Iz Ak Nauk SSSR, Ser Fiz" Vol XI, No 3 - p. 289-97

Discusses the change of the absolute intensity of the lines of copper alloys on a copper base in an AC arc. Discusses the functions during discharge (changes), specific effects on aluminum alloys, and introduction of materials with metallic electrodes into an AC arc. At the end of the article there is a lengthy series of comments by various scientists on the author's article. 24T97



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3

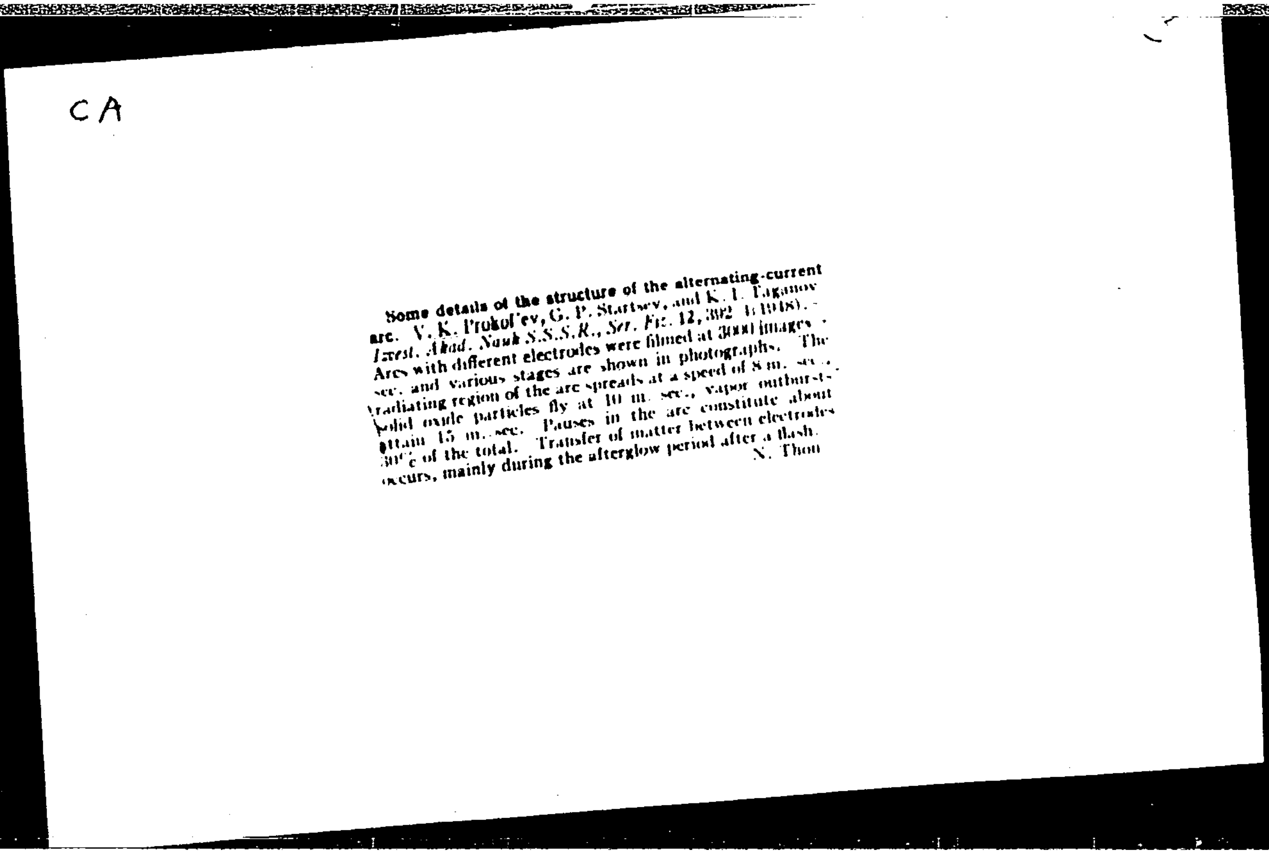
The G.O.I. quartz spectrograph. V. K. Prokof'ev (State Optical Inst., Moscow). *Zavodskaya Lab.* 13, 175-81(1947).—This instrument uses a spherical collimating mirror (f = 600 mm.), a 60° Cornu prism (base = 47 mm.), and a two-element quartz objective. The photographic plate is 9 × 24 cm.; it makes an angle of 41° 40' with the optic axis, and is kept flat. The resolving power of the instrument is 10^4; its relative aperture in the near ultraviolet is ~ 1:21.

Cyrus Feldman

ANDRONNIKOV, K.S.; BALAKOV, V.V.; BUZHINSKIY, A.N.; BURAGO, A.N.; VENTMAN,
L.A.; VISHNEVSKIY, A.A.; VOLOSOV, D.S.; GASSOVSKIY, L.N., professor;
GERSHUN, A.A., professor; YEL'YASHEVICH, M.A.; YEVSTROP'YEV, K.S.;
GUREVICH, M.M., professor; KOLYADIN, A.I.; KORYAKIN, B.M.; KURITS-
KIY, A.L.; PAPIYANTS, K.A.; PROKOF'YEV, V.K., professor; PUTSEYKO,
Ye.K.; REZUNOV, M.A.; RITYN', N.E., SAVOST'YANOVA, M.V., professor;
SEVCHENKO, A.N.; SENNOV, N.I.; STOZHAROV, A.I.; FAYERMAN, G.P.,
professor; FEOFILOV, P.P.; TSAREVSKIY, Ye.N., professor; CHEKHMATAYEV,
D.P.; YUDIN, Ye.F.; KAVRAYSKIY, V.V., professor; VAVILOV, S.I.,
akademik, redaktor

[Optics in military science] Optika v voennom dele; sbornik statei. Pod red. S.I.Vavilova i M.V.Savost'ianovoi. Izd. 3-e, zanovo perer. i dop. Moskva. Vol.2. 1948. 387 p. (MLRA 9:9)

1. Akademiya nauk SSSR. 2. Sostaviteli - sotrudniki Gosudarstvennogo Opticheskogo instituta (for all except Vavilov and Kavrayskiy)
3. Voyenno-morskaya akademiya (for Kavrayskiy)
(Optics)



CA

Some details of the structure of the alternating-current arc. V. K. Prokof'ev, G. P. Startsev, and K. I. Taganov. *Izvest. Akad. Nauk S.S.S.R., Ser. Fiz.* 12, 302-4(1948).—Arcs with different electrodes were filmed at 3000 images/sec. and various stages are shown in photographs. The radiating region of the arc spreads at a speed of 8 m./sec., solid oxide particles fly at 10 m./sec., vapor outbursts attain 15 m./sec. Pauses in the arc constitute about 30% of the total. Transfer of matter between electrodes occurs, mainly during the afterglow period after a flash.
N. Thon

PROKOF'EV V. K.

USSR/Metals - Spectrography

Sep/Oct 50

"Use of Spectral Background in Quantitative Spectral Analysis of Admixed Small Concentrations," V. K. Prokof'ev

"Iz Ak Nauk SSSR, Ser Fiz" Vol XIV, No 5, pp 660-664

Intensity of background of Al samples may be used as standard in detection of small admixt. Graph in intensity-concn coordinates facilitate detn of const for samples.

172T62

ZHDANOVA, A.A., starshiy nauchnyy sotrudnik; PROKOF'YEV, V.K., prof., doktor fiz.-matem.nauk, otv.red.; FREGER, D.P., tekhn.red.

[Methods of approximate quantitative spectral analysis] Metodika priblizhennogo kolichestvennogo spektral'nogo analiza. Leningrad, 1952. 13 p. (Informatsionno-tekhnicheskii listok, no.72(413)). (MIRA 14:6)

1. Leningradskiy Dom nauchno-tekhnicheskoy propagandy. 2. Nauchno-issledovatel'skiy khimicheskiy institut Leningradskogo gosudarstvennogo universiteta im. A.A.Zhdanova (for Kler). 3. Leningradskiy Dom nauchno-tekhnicheskoy propagandy (for Tyumeneva).
(Spectrum analysis)

KOMAROVSKIY, A.G., kand.tekhn.nauk, starshiy nauchnyy sotrudnik; PROKOF'YEV, V.K., doktor fiz.-matem.nauk, prof., otv.red.; TYUMENEVA, S.T., inzh., doktor fiz.-matem.nauk, otv.red.; FREGER, D.P., tekhn.red.

[Method of parallel curves and a system of standards in the analysis of alloyed steels] Metod parallel'nogo grafika i sistema etalonov pri analize legirovannykh stalei. Leningrad, 1952. 11 p. (Informatsionno-tekhnicheskii listok, no.71 (412)). (MIRA 14:6)

1. Leningradskiy Dom nauchno-tekhnicheskoy propagandy. 2. TSentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya (for Komarovskiy). 3. Leningradskiy Dom nauchno-tekhnicheskoy propagandy (for Tyumeneva).

(Steel alloys—Spectra)

BOGDANOVA, V.T., inzh.; TITOVA, N.A., inzh.; TAGANOV, K.I., kand.
fiz.-mat.nauk; TYUMENEVA, S.T., inzh., red.; PROKOF'YEV,
V.K., prof., doktor fiz.-mat.nauk, laureat Stalinskoy premii,
otv.red.; FREGER, D.P., tekhn.red.

[Spectral analysis of steels with an alternating-current arc]
Spektral'nyi analiz stalei s dugoi peremennogo toka. Leningrad,
1952. 3 p. (Informatsionno-tekhnicheskii listok, no.101 (442))
(MIRA 14:6)

1. Leningradskiy Dom nauchno-tekhnicheskoy propagandy.
(Steel--Spectra)

PROKOF'YEV, V. K.

N/5
613.493
.Z2

Tablitsy spektral'nykh liniy (Tables of spectral lines, by) A. N. Zaidel, V. K. Prokof'ev, S. M. Rayskiy. Moskva, Gos. Izd-vo tekhniko teoret. lit-ry, 1952. 560 p. tables

PROKOF'YEV, V. K.

The Committee on Stalin Prizes (of the Council of Ministers USSR) in the fields of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years 1952 and 1953. (Sovetskaya Kultura, Moscow, No. 22-40, 20 Feb - 3 Apr 1954)

Name	Title of Work	Nominated by
Prokof'yev, V.K.	"Photographic Methods of Quantitative Spectral Analysis of Metals and Alloys" (two volumes)	Ministry of Armaments

SO: W-30604, 7 July 1954

LESHCHEV, G.V., inzh.; MAKAROVA, S.A., inzh.; PROKOF'YEV, V.K., doktor fiz.-mat. nauk, prof., otv. red.; TYUMENEVA, S.T., inzh., red.; KLOPOVA, T.B., tekhn. red.

[Spectral analysis of steel using a low-voltage spark; from practices of the spectral laboratory at the Sestroretsk Instrument Plant] Spektral'nyi analiz stali s primeneniem nizkovol'tnoi iskry; iz opyta spektral'noi laboratorii Sestroretskogo instrumental'nogo zavoda imeni Voskova. Leningrad, 1954. 7 p. (Informatsionno-tekhnicheskii listok, no.32(605)) (MIRA 14:7)

1. Leningradskiy dom nauchno-tekhnicheskoy propagandy. 2. Leningradskiy dom nauchno-tekhnicheskoy propagandy (for Tyumeneva)
(Steel—Spectra)

PROKOF'YEV, V.K., doktor fiz.-matem. nauk; SOBOLEV, V.M., kand. fiz.-matem. nauk

Twelfth Colloquium on Infrared Spectroscopy of Celestial Bodies. Vest. AN SSSR 33 no.10:92-93 O '63. (MIRA 16:11)

PROKOF'YEV, V. K.

USSR/Physics - Spectral analysis instruments

Card 1/1	Pub. 43 - 5/62
Authors :	Prokofyev, V. K.
Title :	New spectral devices
Periodical :	Izv. AN SSSR. Ser. fiz. 18/6, 643-661, Nov-Dec 1954
Abstract :	A brief report is presented on the various new types of spectral instruments designed and manufactured in the USSR during the past 3 years (1951-1954). Illustrations of various instruments and their designations for different scientific and industrial research work are included. Main emphasis is placed on the present capabilities of the Soviet optical industry which is capable of manufacturing any type of complicated instrument without aid from abroad. Fourteen USSR references (1950-1955). Illustrations.
Institution :	.....
Submitted :	.....

PROKOF'YEV, V.K.

PLATONOVA, P.I.; PROKOF'YEV, V.K., prof., otvetstvenyy red.; TYUMENEVA, S.T., red.; FREGER, D.P., tekhn.red.

[Solution technique for the specrum analysis of sodium and calcium admixtures in magnesium] Spektral'noe opredelenie primesei natriia i kal'tsiia v magnii metodom rastvorov. Leningrad, 1955. 7 p. (Leningradskii dom nauchno-tekhnicheskoi propagandy. Informatsionno-tekhnicheskii listok, no.100(788)) (MIRA 10:12)
(Magnesium--Spectra)

GUREVICH,D.B.; YESIN,R.A.; PROKOF'YEV,V.K.

Some properties of low-voltage electric impulse discharges.
Izv. AN SSSR. Ser. fiz. 19 no.1:64-65 Ja-F '55.
(MIRA 8:9)
(Spectrum analysis) (Spectrometer)

PROKOF YEV, V.K.

FRISH, S.E.; PROKOF'YEV, V.K.

Ninth Conference on Spectroscopy; proceedings of the second and third sessions. Usp. fiz. nauk 56 no.1:131-142 My '55. (MIRA 8:6)

(Spectrum analysis--Congresses)

Prokof'ev, V.K

USSR/Optics - Spectroscopy

K-6

Abs Jour : Ref Zhur - Fizika, No 5, 1957, 12987

N

Author : Mikonova, Ye.I., Prokof'ev, V.K.

Inst : -

Title : Ratio of the Oscillator Strengths of the Components of the Resonant Multiplets of Aluminum, Thallium, Chromium, Manganese, Molybdenum, and Ions of Varium, Calcium, and Strontium.

Orig Pub : Optika i spektroskopiya, 1956, 1, No 3, 290-297

Abstract : The hook method of D.S. Rozhdestvenskiy was used to measure the relative oscillator strengths in the first resonant doublets of Al I, Ca II, Sr II, and Ba II, and the triplet Cr I, MnII, and Mo I. The measurements were carried out in plasms of a dc electric arc, burning at reduced pressure. The investigated elements were introduced into channel of the positive electrode in the form of a salt or an alloy. A large three-prism spectrograph with f = 2 meters

Card 1/2

USSR/Optics - Spectroscopy

K-6

Abs Jour : Ref Zhur - Fizika, No 5, 1957, 12987

was used in the work. The following results were obtained:

1 Element	2 Investigated Lines	3-4 Ratio of Oscillator Strengths 3 Measured	 4 Theoretical
Ca II	3933,7--3968,5	196(1,4%)	2
Sr II	4077,5--4215,5	1,92(1,0%)	2
Ba II	4554,0--4934,0	1,98(1.1%)	2
Al I	3944,0--3961,5	0.99(1.0%)	-
Tl I	3775,7--5350,5	0.91(1.0%)	-
Cr I	4289,7--4274,8--4254,3	4.96:7.06:9	5:7:9
Mo I	3903,1--3864,3--3798,4	4,86:6,93:9	5:7:9
Mn I	4034,49--4033,07--4030,76	3,73:5,80:8	4:6:8

For TlI, the measurements by G.S. Kvater have been recalculated (Zh eksperim i teor fiziki, 1941, 11, 421)

Card 2/2

Prokof'yev, V.K.

USSR/Optics - Spectroscopy

K-6

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 12986

Author : Nikonova, Ye.I., Prokof'ev, V.K.

Inst : -

Title : Determination of the Concentration of Atoms of Metals in the Plasma of a DC Arc, Burning at Reduced Pressure.

Orig Pub : Optika i spektroskopiya, 1956, 1, No 3, 298-301

Abstract : In the calculation of the concentrations of the atoms, the values of the strength of the oscillators are assumed to be in accordance with the literature data. An assumption was made that, within the limits of the visible diameter of the glowing cloud of the arc, the concentrations obtained represent a certain "effective" numbers of atoms per cubic centimeters of plasma. Investigations were carried out with iron, chromium, aluminum, manganese, calcium, and tin. It was found, that on the average the concentration of the atoms of these elements

Card 1/2

USSR/Optics - Spectroscopy

Abs Jour : Ref Zhur - Fizika, No 5, 1957, 12986 K-6

amounts to 0.5 -- 4% of the total number of arc plasma particles under the experimental conditions (pressure $\approx$ 200 mm, $T \approx 3{,}000^\circ$ K). It was established simultaneously that for CrI with $\lambda = 4254$ A, the most reliable value is $f \approx 0.089$.

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Prokof'yev, V. K

MOROSHKINA, T.M.; **PROKOF'YEV, V.K.**

Spectrochemical determination of small quantities of vanadium in samples of complex composition. Zhur. anal. khim. 11 no.6:714-716 N-D '56.
(MLRA 10:6)

1. Leningradskiy gosudarstvennyy universitet im. A.A. Zhdanova.
(Spectrochemistry) (Vanadium)

PROKOF'YEV, V.K.

51-4-2/25

AUTHORS: Gurevich, D.B. and Prokof'yev, V.K.

TITLE: Distribution of temperature in the plasma of low-voltage and high-voltage spark discharges. (Raspredeleniye temperatury v plazme nizkovol'tnogo i vysokovol'tnogo iskrovykh razryadov.)

PERIODICAL: "Optika i Spektroskopiya" (Optics and Spectroscopy) 1957, Vol.2, No.4, pp.417-420 (U.S.S.R.)

ABSTRACT: Spectral methods of temperature measurement give values of 7000-9000°K for spark discharges even though the latter may be very powerful with, say, 7500 A peak current and 15 microsecond duration. The form of the spectrum, the conductivity and the related extent of ionization in powerful sparks suggest much higher temperatures. The temperature of a spark changes very rapidly in time and space. To study these changes spark discharges between iron electrodes were investigated. Two Cu I lines (5106 and 5153 Å) were two N II lines (5045 and 5179 Å) were used. A diffraction grating spectrograph with 7 Å/mm dispersion was used. It had a system of exit slits equipped with photomultipliers followed by oscillograph recording. A narrow region of the discharge could be selected for study. Single discharges at low voltages : 250 V and 1000 μF (the energy stored in capacitors was about 30 joules) and .

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Distribution of temperature in the plasma of low-voltage and high-voltage spark discharges. (Cont.)

at high voltages : 6.5 kV and 6.5 μF (again the energy was about 30 joules) were studied. The self-inductance in both cases was about 5 μH. The spectral temperature measurements took about 10 μsec in sparks whose duration was several hundred microseconds. The low-voltage discharges were aperiodic, the high-voltage ones oscillatory. In the latter case the Cu I line intensities did not and the N II ones did become zero at the current minima. The duration of the Cu sparks was longer than that of the N sparks. The intensity of the N sparks was highest at the beginning of the discharge. Temperatures calculated from the Cu I lines, ranging from 5000 to 9000°K, are graphed as functions of time for various distances ℓ (0 to 14 mm) from the electrodes. For the low-voltage sparks at small ℓ the Cu I temperature rises with time for about 400 μsec from about 5500 to 7000°K. For medium ℓ the temperature rises to a maximum of 9500°K after 200 μsec and then falls to near 5000°K. For large values of ℓ the temperature falls with time from 7000°K or remains constant at about 7000°K.

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Distribution of temperature in the plasma of low-voltage and high-voltage spark discharges. (Cont.) 51-4-2/25

depend on the capacitor voltage, which was varied from 2100 to 6300 V, and therefore the temperature does not depend on the energy supplied or the current flowing. At small distances (ℓ = 0 to 1 mm) from the electrodes the spectral Cu I temperatures were higher at the current minima than at the current maxima. The converse was found to hold for about ℓ = 2 mm. The temperatures for ℓ from 0 to 2 mm were between 5000 and 9000°K during the first 200 μsec. At ℓ = 4 mm or more the light emission ceased to be oscillatory and the Cu I temperature varied between 7000 and 9000°K with either a maximum at 100 μsec or a continuous fall with time. Only one value of the N II temperatures is quoted: 32000°K for ℓ= 0 in low-voltage sparks at the end of the discharge (t = 400 μsec). Some effects of the electrode polarity were also found. There are 3 figures, 2 tables, 9 references (4 of which are Slavic).

SUBMITTED: September 6, 1956.

AVAILABLE: Library of Congress

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AUTHOR: Prokof'yev, V. K., Professor, Doctor of Physical and Mathematical Sciences

32-10-15/32

TITLE: Emission Spectral Analysis in the USSR (Emissionnyy spektral'nyy analiz v SSSR)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol 23, Nr 10, pp 1187-1201 (USSR)

ABSTRACT: In the introduction to this paper the history of the development of the respective methods is told, which is said to have begun in the USSR in 1930. As the last stage of development mainly the work by the Soviet scientists G. S. Landsberg and S. L. Mandelstam is described. The latter is the author of one of the newest reference works on spectral analysis. Building the necessary apparatus was begun in the USSR in 1938. At present more than 5000 apparatus for spectral analysis are being used in the USSR. Each of the larger plants possesses about 15 of these apparatus, for which 50 men personnel are occupied in 3 shifts. The following apparatus are used: A quartz spectrograph of average dispersion "ИСМ-28"; a three-prism glass spectrograph "ИСМ-51" with exchangeable camera with f = 120 and 270 mm; and with f=800 (УФ=84) and an autocollimation camera with f=1300

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Emission Spectral Analysis in the USSR 32-10-15/32

(УФ-85); an autocollimation spectrograph with great dispersion and with quartz glass optics (КСА-1); a spark generator with controlled spark according to the Sventitskiy-scheme. (It may be presumed that these are the latest types). Production of the following apparatus has been newly introduced: an alternating current arc generator with low voltage sparks and electron-controlled ignition "ГЭУ-1"; a non-recording (МФ-2) and a recording microphotometer (МФ-4); a simple spectro-projector (МС-18), and a double one (ДСП-1); a measuring microscope (МИР-12); styloscopes:a steady one (СЛ-11) and a transportable one (СПР-1); a stylometer (СТ-7); like the "latest" spectrographs they have great dispersion and a dispersion net (ДФС-3, ДФС-8, ДАС), "flat" with a focus distance of 4, 2.6, and 2 m and "bent in" according to the scheme (Pashen-Runge) with a (Pouland) circle diameter of 2 m (ДФС-9).

In the chapter dealing with the present stage of the emission spectral analysis in the USSR the newest ways of applying this method are described as e.g. with respect to analyses of minerals, ores, and slags, of which 5 million experiments are carried out every year (and 40 elements were found), analyses

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of alloys; analyses of pure metals with very low secondary components. Qualitative analyses in the case of elements of difficult reaction and gases; spectral analyses of gas mixtures; photoelectric methods of analysis in which four different Soviet scientific centers worked out their apparatus separately viz.:
1) "Otgautoprom" (organization and automobile industry developed the photoelectric systems "фэ СА-1" andфэ СА-2" and the photoelement "СЦ В-4".
2) The commission of spectroscopy built the apparatus "ФЗ С-1" and the collimator spectrograph "И СМ-51".
3) The scientific group of "Dneprospetsstal" under the supervision of I. V. Podmoshenskiy, built the 8-channel photoelectric plant of the spectrograph with a 2 m diffraction net according to the pattern which is known in other countries by the name of "quantometer" and,
4) at the Physical Institute AN USSR, where 2 groups of scientists develop the latest spectrographic apparatus. In the same chapter the methods of flame-photometry are at the end described, and a number of Soviet scientists is mentioned, who published methodical works on various fields ofemission spectral analysis.

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In the chapter dealing with the theoretical bases of Emmission Spectral Analysis numerous works by Soviet scientists are referred to, which deal mainly with the following subjects:
1) Processes on electrodes,
2) Reaction in the gas medium, and
3) concentration of atoms in the discharge zone.
There are 129 references, 128 of which are Slavic.

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1. Emission-Spectographic analysis

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Prokofyev, V.K

32-11-22/60

AUTHORS: Moroshkina, T.M., Prokof'yev, V.K., Smirnova, M.N.

TITLE: The Spectrometric Determination of Low Uranium Content in Natural Samples (Spektrokhimicheskoye opredeleniye malykh kolichestv urana v prirodnykh obraztsakh)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 11, pp. 1324-1327 (USSR)

ABSTRACT: An uranium content of 10^{-3}-10^{-4}o/o is concerned here. As may be seen from published works available it has hitherto not yet been possible to attain the necessary sensibility of determination, especially because the spectral determination of uranium presents difficulties. It is suggested in this paper to prepare standard samples ("etalons") from the samples to be analyzed by the method of admixtures (4). It was found that uranium, which does not vaporize easily, could be vaporized more easily from the melt crust than otherwise, which may be explained by the fact that the crust possesses greater electric conductivity. Besides, it may be assumed that at temperatures of 1300-1500°, at which the crusts are formed, uranium is regenerated to the metal state or oxygen compounds which have a low valence. In this way the vaporization of uranium is made easier. There follows a description of spectral analysis. The spectrograph produced by the firm of Hilger was used,

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The Spectrometric Determination of Low Uranium Content in Natural Samples 32-11-22/60

alternating current arc: 220 V / 7 A, the electron consisted of electrolytic copper, had a diameter of 8 mm, and an indentation where the crust of the sample could be fastened; the films "Ilford Ordinary" and "НИКФИ", type 2 (fine-grained) were used. The method was tested with several kinds of ores, and the results obtained were compared with those obtained by chemical and luminescence methods. A further examination was carried out by adding admixtures of uranium in certain quantities to the already investigated samples for reasons of comparison. The results obtained were satisfactory. There are 1 figure, 3 tables, and 4 references, 1 of which is Slavic.

ASSOCIATION: Leningrad State University (Leningradskiy gosudarstvennyy universitet)

AVAILABLE: Library of Congress

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24(7) PHASE I BOOK EXPLOITATION SOV/2719

Prokof'yev, Vladimir Konstantinovich, Doctor of Physical and Mathematical Sciences, Professor

Emissionnyy spektral'nyy analiz v SSSR; obzor (Emission Spectrum Analysis in the USSR; A Survey) Leningrad, 1958, 34 p. 6,200 copies printed.

Sponsoring Agencies: Obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy RSFSR, and Leningradskiy dom nauchno-tekhnicheskoy propagandy.

Ed.: N. S. Sventitskiy; Tech. Ed.: D. P. Freger.

PURPOSE: This book is intended for research chemists, physicists, and students of university courses in spectroscopic analysis.

COVERAGE: The book briefly reviews the state of spectrum analysis in the Soviet Union from 1930 to the present, and its various fields of application.

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The author discusses major contributions of Soviet scientists in this field, notable among which are the following: B. A. Lomakin-- empirical relationship between the intensity (I) of spectral lines and the concentration (c) of an element in a sample $I = ac^b$, where a and b are constants; L.Ye. Vvedenskiy-photometric interpolation a visual method of photographic photometry of spectral lines in the visible and ultraviolet ranges of the spectrum; N. S. Sventitskiy--activation of an a-c arc and its use in the analysis of some alloys; and Academician L. S. Landsberg--the production of "steeloscopes" (spectroscopes for steel) with automatically collimating optical systems and simplified a-c arc generators. Secondly, a survey of apparatus, methods of analysis, and theoretical principles of spectroscopic analysis is given along with a discussion of leading Soviet authorities and their accomplishments in these fields. There are 217 references: 216 Soviet and 1 German.

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[The book is divided as follows. No table of contents is given]

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I. Present State of Emission Spectrum Analysis in the USSR 8

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Translation from: Referativnyy zhurnal, Mekhanika, 1960, No. 4, p. 111, # 4984

AUTHORS: Gurevich, D.B., Prokof'yev, V.K., Snigirev, Yu.A.

TITLE: Photoelectric Devices for Recording the Spectra of Luminosity of Momentary Processes

PERIODICAL: Tr. Komiss. po pirometrii pri Vses. Nauchno-issled. in-te metrol., 1958, sb. 1, pp. 51-56

TEXT: The authors point out that the use of devices with photoelectric recording represents the most effective mode of measuring the radiation intensity with resolution in time. However, the photoelectrical receiver records only one spectral line or a narrow section of the continuous spectrum. If it is necessary to obtain knowledge on the entire spectrum or on certain of its sections, either the transposition of the spectrum before the exit slot of the monochromator may be accomplished (scanning), or several exit slots, i.e., the multi-channel record scheme, may be used. Two devices are described in the article, which use both of the modes of recording. One of the devices is a four-channel photoelectric spectrometer and analyzes the wide spectral region from 12,000 to

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Photoelectric Devices for Recording the Spectra of Luminosity of Momentary Processes

3,600 Å. The light is dispersed by a diffraction grating. The exit slots are able to single out any four lines or two lines and two sections of the background in their vicinity. The light fluxes singled out by the slots get into photomultipliers; the photocurrent is amplified and fed to oscillographs, the screen images of which are photographed. The oscillograms yield the time-variation of the intensities of the spectral lines or the sections of the continuous spectrum. The device permits the fixing of flares with a duration from 10^{-6} to 1 sec. The other device accomplishes the scanning of the spectrum by means of two channels in the regions of either 4,000-6,500 Å or 6,500-12,000 Å. The recording time of a single spectrum amounts to 2×10^{-3} - 0.1 sec. The number of spectra recorded in time sequence amount to ten. Two slots simultaneously run over the spectrum, also obtained by means of the diffraction grating. The light flux gets into the photomultiplier, and the photocurrent is fed to a double-beam oscillograph, the screen images of which are filmed. The measurements of the temperature of spark discharges in time were carried out by means

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Photoelectric Devices for Recording the Spectra of Luminosity of Momentary Processes

of these devices in various sections of a plasma. Simultaneously, the discharge current was recorded oscillographically. Graphs illustrating the results are added.

Yu.P. Rayzer

Translator's note: This is the full translation of the original Russian abstract.

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PROKOF'YEV, V.K.

66354

SOV/81-59-19-67720

5.5310

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 19, p 124 (USSR)

AUTHORS: Prokof'yev, V.K., Sventitskiy, N.S., Taganov, K.I.

TITLE: The Spectral Analysis of Uranium and Its Compounds for Admixtures by Means of Diffusion-Convection Transfer

PERIODICAL: Fiz. sb. L'vovsk. un-t, 1958, Nr 4(9), pp 42 - 44

ABSTRACT: For eliminating the superpositions of the U spectrum and the intense continuous background it has been proposed to divide in time the processes of separation of admixtures and the excitation of their spectra. This is obtained by a preliminary transfer of the admixtures to a supporting graphite electrode. The second graphite electrode containing an uranium sample which has been preliminarily calcined and converted to U_3O_8 is heated by an auxiliary d-c current. The electrode with the sample serves as anode; two carbon cathodes are installed symmetrically perpendicularly to it. At the burning of the auxiliary arc the fractionating admixtures are transferred to the supporting upper electrode and the non-volatile U_3O_8 remains in the channel of the lower electrode. This transfer, in distinction from the electro-spark transfer, is termed diffusion-convection

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The Spectral Analysis of Uranium and Its Compounds for Admixtures by Means of Diffusion-Convection Transfer

transfer. Graphite rods of square 7 x 7 mm cross section serve as electrodes; in the lower-electrode a hollow is made for the sample and the graphite cover (depth of the channel 9 mm, diameter 4 mm). The upper electrode (also 7 x 7 mm) has on the butt a hole which in the center is 1 mm deep. The U_3O_8 sample (200 mg for small admixture contents and 50 mg for higher ones) is mixed with 2% of a carrier (AgCl or NH_4Cl) and placed into the channel of the graphite electrode, which is closed by a cover with an opening of 0.8 mm in diameter. The auxiliary arc for the incandescence of the graphite electrode burns on its ribs at 10 a for 1 min. Later on the electrode with the sample is replaced by a sharpened graphite rod and the spectra are photographed during burning of the transfer products in the a-c arc on a KSA-1 autocollimation spectrograph at a slit width of 0.02 mm; for isoortho-plates with a sensitivity of 600 according to X and D the duration of exposure is 1 minute at 8 a. The determination of the admixture is carried out according to the last lines; the lines of Mn, which is introduced in the form of nitrate to a concentration of 1%, serve as inner standard. Synthetic standards are prepared on the base of U_3O_8 of known chemical composition. The method has a high sensitivity: the Cd lines are detected at a concentration of $< 5\cdot10^{-6}\%$, B lines at a concentration of $10^{-5}\%$.

N. Sventitskiy

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NIKONOVA, Ye.I.; PROKOF'YEV, V.K.; ZAKHAROV, V.P.

Concentration of metal atoms in a d.c. carbon arc. Fiz. sbor. no.4:64-68 '58. (MIRA 12:5)

1. Gosudarstvennyy ordena Lenina opticheskiy institut imeni S.I.Vavilova.

(Atoms) (Electric arc)

PROKOF'YEV, V.K.; MOROSHKINA, T.M.; BOGDANOVA, I.V.

Spectrochemical analysis of rare elements in complex solutions by means of ion exchange adsorption. Fiz.sbor. no.4:112-114 '58. (MIRA 12:5)

1. Khimicheskiy fakul'tet Leningradskogo ordena Lenina gosudarstvennogo universiteta imeni A.A.Zhdanova.
(Metals, Rare and minor--Spectra) (Ion exchange)

SOV/58-59-12-28498

24.2120

Translation from: Referativnyy zhurnal. Fizika, 1959, Nr 12, p 284 (USSR)

AUTHORS: Gurevich, D.B., Prokof'yev, V.K.

TITLE: On the Temperature Distribution in the Plasma of a Low-Voltage and High-Voltage Spark Discharge

PERIODICAL: Fiz. sb. L'vovsk. un-t, 1958, Nr 4 (9), pp 166 - 170

ABSTRACT: The time course ($\tau = 10\,\mu$ sec) of temperature in a low-voltage (250 v) and high-voltage (6.5 kv) spark discharge, between Fe-electrodes, was investigated. Measurements were carried out for several sections of the flame. The observed temperatures (5600 to 9600°K), deduced from the Cu I 5106 and 5153 Å lines, characterize the temperature of the peripheral zones of the discharge, where as the measurements from the lines, N II 5045 and 5149 Å yield the value T = 32,000°K for the initial stage of the discharge, which diminishes to 24,000 - 22,000°K by the end of the discharge. The distribution of the continuous background in the spectrum of the low-voltage pulse discharge between the Cu

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SOV/58-59-12-28498

On the Temperature Distribution in the Plasma of a Low-Voltage and High-Voltage Spark Discharge

and Zn electrodes, corresponds to the color temperatures, close to the boiling points of Cu (2868°K) and Zn (1180°K). Based on this fact, a conclusion is drawn that there are droplets of molten metal in the flame of the low-voltage discharge.

A.G. Sviridov

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Card 2/2

NIKONOVA, Ye.I.; PROKOF'YEV, V.K.

Relative oscillator forces for some multiplets of atoms and ions. Fiz.sbor. no.4:318-319 '58. (MIRA 12:5)

1. Gosudarstvennyy ordena Lenina Opticheskiy institut imeni S.I.Vavilova.

(Spectrum analysis)